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Telephones: Temple Bar 6251-2-3-4

Vol. clxxxviii January 21, 1955 No. 5840

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NEWS SUMMARY

THE first of a series of articles examining those problems involved in the improvement of existing rural schools is presented on p. 124

AT THE OFFICIAL OPENING of Hertfordshire's 100th post-war school—the Ravenscroft Secondary Modern School—Sir David Eccles, Minister of Education, expressed appreciation of the county authorities' building teamwork. p. 127

A CATALOGUE listing those modular building components available generally has been issued by the Modular Society as the first of a series. p. 127

THIS YEAR'S CONGRESS of the International Union of Architects will take place in July at The Hague—its main theme, "Housing from 1945–1955." p. 137

NEED FOR GREATER CO-ORDINATION in the use of dry construction was expressed at a "colloquium" on the subject, held at the Building Centre last week. p. 138

MR. NIGEL BIRCH, Minister of Works, was the principal guest of the LMBA at their annual lunch in London on Tuesday. An account of the Minister's speech is given. p. 143

AN APPRAISAL OF BUILDING FILMS available for loan in the industry has been carried out by a specialist panel formed by the Scientific Film Association. p. 147

NOTHING DOING, or DOING NOTHING

THE Council of the RIBA has now informed members that it will sponsor no new organisation of a trade union nature, and will single out no one existing organisation for preferential treatment. It advises salaried members to join trade unions appropriate to their particular employment and promises to "proceed actively to explore alternative means of attaining the agreed objectives of improving and strengthening the conditions of employment of salaried architects in all classes of employment." With the quoted "resolution in mind," it is the intention of the Council to review the functions of the department which serves salaried members in official positions and in private practice to ascertain: (1) in what direction further effort might be practicable and of benefit to salaried members generally; (2) how co-operation and liaison with the various negotiating bodies may be strengthened and improved.

The reason for the decisions peers through the print of this wordy and woolly document and seems to have some substance. No trade union of architects can be numerically strong enough to weather the certain opposition of NALGO and the IPCS and to obtain recognition by the larger employing bodies. If this reason is sound, it is proper to ask why the Council was unaware of it before so much money was squandered on last year's questionnaire. The Council was then advised by the Salaried and Official Architects' Committee which had spent many months preparing the study summarised in the papers issued with the questionnaire. On this committee sit influential members of NALGO and an official representative of the IPCS. On the Council of the RIBA, but not on the Committee, sits a nominee of the ABT (under the "no preference" resolution it seems that he must go, or else the British Architectural Guild and others must be granted equal privilege). Ignorance seems inexcusable.

The waste on the questionnaire is doubly underlined when the Council admits that, even with the 50 per cent. response which was received, the "expert statisticians" warned the Council against any useful interpretation. Was a greater response expected?

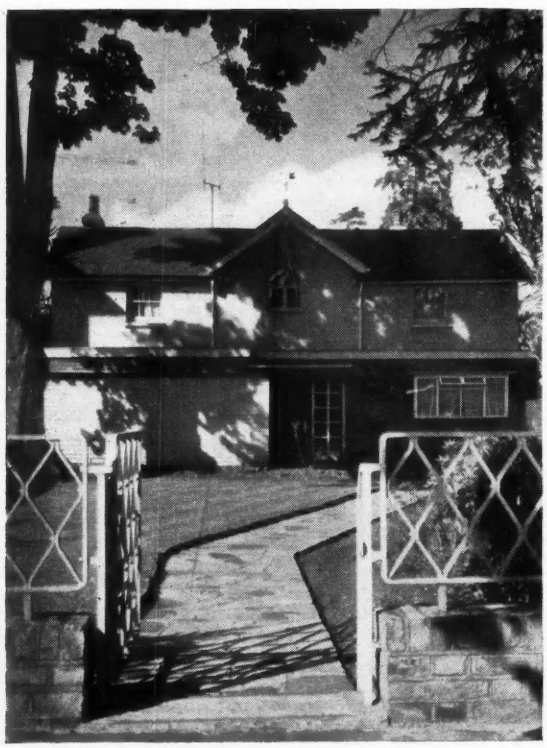
The next step? The review of the functions of the department of the Institute concerned has been referred to the Salaried and Official Architects' Committee, which already advises the Council on the policy of that department, and is itself advised by the department. The Committee, with the help of the department, prepared the earlier report.

"Results will be reported in due course." The words of the next pronouncement must be very carefully chosen. It will do no good to explore avenues and turn stones.

NEW HOMES FOR OLD

THE adequacy of our housing programme does not depend solely on the building of new houses: it depends on maintaining houses, often built long ago; on overtaking the arrears of repair work caused by war conditions; on keeping structurally sound houses in good order; on improving those which lack modern amenities, and making better use of them where possible by conversions; and finally in demolishing and replacing as soon as possible those which are unfit for human habitation and cannot be made fit at reasonable cost. All of these factors have been fully considered in the housing drive which the Government has sponsored. To-day the rate of house building is nearly 350,000 a year, and the figures for November show that about a third of those completed have been built by private owners. The removal of all licensing in the building industry, together with the provisions of the Housing Repairs and Rents Act, 1954, should also ensure that repairs are once again fully maintained.

It is in the field of improvements and conversions that much remains to be done. Although grants were available under the Housing Act of 1949, only 3,000 dwellings had been improved and 700 new dwellings created by conversion at the end of 1953. When it is realised that of houses owned by private landlords a total of 4¾ million are over 65 years old, it gives some idea of the size of the problem. The bulk of the houses in this class could give years of good service if they were improved by the provision of bathrooms, hot water, up-to-date cooking arrangements, etc., and in some cases where they are too big for present-day needs they could be converted into good, comfortable flats. The Ministry of Housing and Local Government have been at considerable pains to make known the terms of the Act in respect of improvements and conversions, to ensure that the maximum use shall be made of them. It provides for a grant to the landlord by the Government of half the cost of the improvement or the conversion, up to a maximum of £400 per dwelling. When it is realised that the new council houses cost £1,500, and flats £2,000 and more, exclusive of the cost of purchasing and demolishing existing property or of the costs attaching to the purchase and development of new sites, it will be appreciated that conversions which produce modern, well-equipped flats for a total conversion cost of under £500 a flat represent a saving not only of building labour but of public money.



JASPER LODGE, EAST MOLESEY. An old stable converted into a house. Eric Lyons, FRIBA, architect for conversion. (From "New Homes for Old.")

Some idea of the amount of public interest which has been aroused in this subject is given by the number of people who visited the exhibition of four houses erected by the Ministry in Holles-street, London, last June, and this has now been supplemented by a further publication * in the series for which the Ministry are well known. *New Homes for Old* follows the general format of their other excellent publications such as the Housing Manual and its Supplements, and gives very good examples of the type of work which has already been done in this field.

The importance of obtaining expert advice on the preparation of plans and specification cannot be overrated. Each local council has a list of architects and surveyors practising in the locality who are willing to do this kind of work, and it must be hoped that full use will be made of their services.

It is easy to criticise some of the results which may not always be as perfect as modern ideals—but how much better they are than what exists! It is also a point to be remembered that it is not only the drab tenancies of back streets, or the gaunt blocks of flats in provincial and suburban areas which are in need of modernisation, but that some fine exteriors conceal uneconomical and antediluvian interiors, and these, with relatively small expenditure on them, will often create homes of great comfort, as well as architectural beauty, such as could no longer be built under modern conditions. Examples of this are the Paragon at Blackheath and the Circus at Bath, and there must be many others throughout the country. Although many such houses situated in beautiful surroundings may not be conveniently placed for living, they are well worth study in conversion.

Environment must also be an important consideration in deciding upon the suitability of property for conversion. There are too many drab streets in our country and we do not wish to prolong their lives a day more than is absolutely necessary. Great care must therefore be taken in allowing conversions to see that property which should rightly be demolished in the near future, even though structurally sound, be not given an extra lease of life which will allow it to remain too long as a hindrance to proper redevelopment, otherwise we shall have piecemeal development. This is already happening where blocks of flats are being built amidst or around existing patches of smaller property which are obstructing a more comprehensive and tidy development. It is hoped, therefore, that improvements and conversions will be considered from the town planning aspect, as well as from that of the individual houses concerned, and where possible, large groups of dwellings should be dealt with in such a way as to maintain and improve the character of the district for the period of 15-20 years which is envisaged as the extended life of the property. In this way it should be possible to mingle the old with the new, rather than interpose the new within the old. Town planners and their committees should bear in mind the effect which these conversions may have on future town planning, and they should use their influence to see that conversions are suitably and effectively applied.

* HMSO, price 3s. 6d.

Notes of the Week

MULTI-STOREY DRY CONSTRUCTION

THOUGH the architect is no longer the arbiter of taste in everything from waistcoats to wainscoting, I maintain a childlike faith in his ability to maintain control of architecture if he tries, writes Basil Marriott. He does, however, need help in assessing the conflicting claims of newer methods and materials. Where they are of the rapidly increasing number of claddings or sheathings to lighter constructional forms, and to-day, of course, dryness is all, the competition is pretty cut-throat (if not cut-price, alas !) and one would have thought the need to catch the architect's ear increasing rather than otherwise. It is odd, therefore, to hear from some competitors that it no longer pays them to bother with architects, who notoriously see " reps." only by appointment and then tend to ask awkward questions, more profitable (or is it gullible?) targets being the housewife, the build-it-yourself groups or the popular writers of the " how to build a cosy humanist architecture out of a cardboard box and a yard of contemporary print " school of thought.

Others, however, seem still to find it worth while (and, being business men, presumably profitable) to go on giving the architect the service he wants — that is, hard fact in terms applicable to his job, having taken the trouble to find out what that job is. A good example of this approach seemed to me the show put on last week at the Building Centre by the Cape Asbestos people. This was for the benefit of their fellow-members of the Modular Society at the end of the few days' Colloquium on their latest developments in dry construction methods reported elsewhere in this issue. A singularly well-clued-up spokesman, whom I will not embarrass by naming, answered questions from a largely architectural audience on a quick-change variety of points, with the help, or sometimes the token opposition, of a platform. This he did in architects' language with authority, engaging frankness and, above all, good humour—a vastly different performance from the what's-my-line-shooting of the more gruesomely facetious PR boys in this field.

I should have thought the resulting good will was proportionate among an audience which, considering the weather and the hour, was large.

RURAL SCHOOLS

THE HANDSOME TRIBUTE paid by the Minister of Education to the Hertfordshire Education Committee, their staff, and the County Architect, Mr. C. H. Aslin, PRIBA, is reported on another page. It is justified not only by reason of the quality of design of this Council's post-war schools' programme (which has now produced its 100th school), but by reason of the team-work by which this considerable result has been achieved.

Sir David Eccles, in his speech on Monday, emphasised that the leader of the building team should be the architect, though by inference he made clear that not every architect is qualified for the post. At the same time he asked that local authorities should make use of private architects in reorganising all-age schools in rural areas, within the time limit that had been set. The first of a series of special articles (by Messrs. Stillman and Eastwick-Field) on rural school reorganisation, which appears elsewhere in this issue, will open the eyes of many who are unaware of the deplorable conditions under which many children in the country areas receive their education. Private architects, who know rural conditions, can certainly help in improving things, and we shall hope that the Minister's advice will be followed.

DESIGN DECADE

THE Council of Industrial Design has this month celebrated its tenth birthday. A particularly happy circumstance is the conferring of a Knighthood on its Director Gordon Russell almost to coincide with the event, writes Basil Marriott.

The CoID's value, if not indispensability, has now been amply demonstrated, whether from the standpoint of the manufacturer, the shopkeeper or the public who are the targets of the threefold approach to the task of raising British design standards. The occasion is, therefore, also one for " many happy returns," for consolidation of ground won in an uphill and unremitting operation is vital. Results to date are impressive for a comparatively young body brought early to bed of the Britain Can Make It Exhibition and, after a cruelly short period of gestation, yet making a vital contribution to the Festival of Britain.

To quote salient points, the Record of Designers now lists some 2,500 names, and copes with upwards of 400 inquiries a year. Design Review represents 6,000 items both as a ready-reference and a basis for exhibition selection. Thirty courses have been attended by a thousand retailers, and shops have been helped to organise their own and to mount travelling displays. One hundred and twenty public exhibitions,, attended by 14 million people, have been arranged at home, and 16 overseas. " Design " magazine has grown from 24 to 56 pages; 2,500 schools have had Design Folios: filmstrip and other visual material is in constant circulation, and nearly 2,000 lectures have been provided. Not least of the CoID's services are its photographic and reference libraries, comprising 40,000 prints as well as slides, and 2,500 volumes.

The CoID's functions are necessarily largely educational, if demand for well-designed things is to accompany supply. Perhaps, therefore, " Happy Birthday, dear Teacher," would not be an inappropriate signing-off tune.

COMING EVENTS

SATURDAY, JANUARY 22

ECCLESIOLOGICAL SOCIETY.—Film on Historic Parish Churches (Part II—Their Interiors), shown by Mr. Lawrence E. Jones. 2, Bloomsbury-square, WC1. 3 p.m.

UNITED COMMITTEE FOR THE TAXATION OF LAND VALUES.—Conference on rating of land values. County Hall, Westminster Bridge, SE1. 11 a.m. and 2.30 p.m.

TUESDAY, JANUARY 25

NATIONAL FEDERATION OF BUILDING TRADES EMPLOYERS.—Annual dinner. Principal guest, Sir Winston Churchill. Dorchester Hotel. 7 p.m.

INSTITUTE OF BUILDERS (LICENTIATE DISCUSSION CLUB).—" Piling," by Mr. Savile Packshaw, BSc.(Eng), MICE. 48, Bedford-square, WC1. 6.30 p.m.

EAST HAM TECHNICAL COLLEGE.—" The Installation of Modern Solid Fuel Burning Appliances," by Mr. P. Cornford. Department of Building, Technical College, Arragon-road, E6. 7.15 p.m.

WEDNESDAY, JANUARY 26

ARCHITECTURAL ASSOCIATION. — " Planning by Form," by Mr. J. B. Bakema. 7 p.m.

NATIONAL FEDERATION OF BUILDING TRADES EMPLOYERS.—AGM. Victoria Halls, Bloomsbury-square, WC1. 10:30 a.m.

ROYAL SANITARY INSTITUTE.—" Air Pollution," by Sir Hugh Beaver. 90, Buckingham Palace-road, SW1. 2.30 p.m.

THURSDAY, JANUARY 27

INSTITUTION OF STRUCTURAL ENGINEERS.—" Brittle Fracture Problems in Steel Construction," by Mr. G. M. Boyd, AMIStructE. 11, Upper Belgrave-street, SW1. 5.55 p.m.

FRIDAY, JANUARY 28

POLISH CULTURAL INSTITUTE.—" The Ancient City of Warsaw ": a film introduced by Mr. T. Braddock, FRIBA. 6, Hanover-street, W1. 6 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—" Co-operation in Engineering Research between Educational Institutions and Industry," by Professor E. Griffen, Mr. V. C. Davies and J. H. R. Nixon. 1, Birdcage Walk, Westminster, SW1. 5.30 p.m.

PROFESSOR NERVI'S VISIT

PROFESSOR PIER LUIGI NERVI, the Italian structural concrete designer, is to pay a four-day visit to London next month. On February 24 he will be lecturing on " Some reinforced concrete structures in Italy " at the invitation of the Institution of Structural Engineers, the Cement and Concrete Association and the Reinforced Concrete Association.

It may be expected that the designer of such world-famous works as the Turin Exhibition halls with their recticulated arched roofs, of the lattice-roofed hangars (so unfortunately destroyed during the war), of the Florence stadium with its cantilevered canopy, and of the factories with their mushroom-head columns and veined floor slabs, will be talking in the main of his own studies, experiments and constructions. The most recent of these, and one which keeps Professor Nervi perpetually busy and constantly moving between Rome and Paris, is the new Palace for UNESCO in Paris, on which he is collaborating as engineer with the architects Marcel Breuer and Bernard Zehrfuss.

It will be a rare opportunity for architects and engineers in this country to hear at first hand of the design principles underlying those familiar structures—and others less familiar. In the engineering world Nervi is regarded as one of the greatest living engineers; among architects he is a fellow-architect, the designer, in the architectural sense as well as the constructional, of his own projects. Professor Nervi will undoubtedly also have some interesting reflections to make on the architect-engineer relationship (the closer integration of the two professions is a subject very close to his heart).

NEW ZEALAND HOUSE

MR. R. H. MATTHEW, Professor of architecture at Edinburgh University, who has been commissioned to design the new New Zealand House in London, is expected to go to New Zealand in October next year to discuss the project with the Government. He will take final sketch plans with him. The New Zealand Government Architect, Mr. Gordon Wilson, has returned home with this information after three and a half months in Britain, the United States and Europe. His main object was to discuss the planning of New Zealand House with Professor Matthew. He said that preliminary sketch plans might be available next March. The building would be at least 12 storeys, said Mr. Wilson.

The Improvement of Rural Schools

1.—*THE BACKGROUND*

By JOHN STILLMAN, ARIBA, and JOHN EASTWICK-FIELD, BAArch(Hons.), ARIBA

IN NOVEMBER LAST *the Minister of Education drew attention to the fact that, in all post-war school building, the rural areas had suffered, both because it had been impossible to provide new secondary schools and because there had not been the resources to make all those improvements to existing primary schools which are so badly needed. The present article, which is to be followed by others dealing with building and administrative matters, is concerned with the improvement of existing schools, and the series has been written with the object of helping architects—particularly private architects who may not have had experience of school work—to become familiar with the problems and with some of the steps which can be taken to solve them.*

IN a pamphlet* published in 1840 by the National Society for Promoting the Education of Children of the Poor in the Principles of the Established Church, it was said that a *barn* would form no bad model for a school. All that was thought necessary at this early stage in the development of general education was a large room in which pupils of all ages were crammed in rows along the length of the building under the supervision of a single master situated in the middle. He was helped in his "teaching" by elder children who were known as "monitors" and who passed on to their younger brothers and sisters instruction in the three Rs. Sometimes a small room was attached for infants, but mainly the school consisted of just one large room, some elementary arrangement for cloaks, and living quarters for the teacher.

It must be remembered that except for monastic, public and grammar schools, entry to which was restricted in practice to privileged classes, there was almost no education for the majority of the population until the early part of the nineteenth century. Between 1808 and 1870, voluntary societies supported by the Churches set up and maintained a great many free schools of the pattern already described.

GOTHIC FOR BUILDINGS

It is not surprising that since the schools were associated with the Churches their architects should have chosen to build in the Gothic style. In the large towns most of these early schools have had to be replaced, but in the countryside the large majority of them have remained virtually unchanged, having survived three distinct systems of education. No doubt the buildings may have been adequate for the original limited conception of education, but could hardly be less suitable for present-day ideas.

From 1833 onwards, the Government made grants to help in the building of Church schools, but nevertheless the provision of schools was by no means complete even in 1870. At this date the Government decided to take direct action, and to make good the deficiency. In order to do this they set up school boards which organised the building and maintenance of a large number of schools out of rates and taxes. These schools were designed to retain strict supervision by the principal master, but to the single hall of the earlier church schools were added a number of smaller rooms so as to permit the division of the pupils into classes. These classrooms were often separated from the central hall only by glass screens.

Not long after, attendance was made compulsory, and by 1902 the State accepted full responsibility for all elementary education. Those schools which had been founded by independent bodies now received substantial financial help, but the Governors were permitted to retain control of these schools within certain limits. There were thus two kinds of schools, which to-day are known as County schools and Voluntary schools. In spite of State intervention, the ecclesiastical style of the earlier schools was followed by the Board schools for many years, and most of the country schools with which we are now concerned have this style.

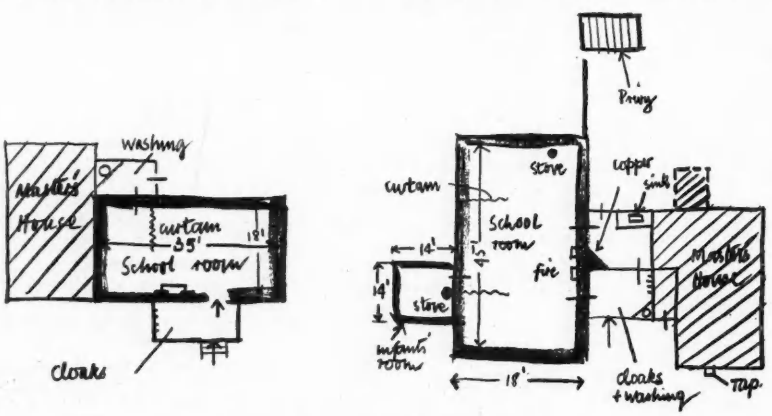
A CHANGE IN STANDARDS

From the time when the State began to provide schools—only about 100 years ago—to the present day, the conception of education for the public has changed out of all recognition; most architects will be familiar with the high standards of the new schools, especially those built since the war. It is significant, however, that most of these schools are designed for reasonably large numbers of pupils and are for the most part in towns, or are associated with new housing estates. New school buildings have been concentrated in these areas because the general movement of population from the countryside and latterly the rise of the birthrate and the raising of the school leaving age have created an urgent demand. Because of this demand it has usually been possible for the education authority concerned to plan its schools to the size which is considered educationally satisfactory, more particularly with separate classes for children of different ages and with an adequate number and variety of staff.

By contrast, there has been no incentive to build new schools in the villages, which to-day are so often depopulated. The existing schools too were often allowed to become dilapidated because the various authorities who controlled them were reluctant to spend enough on their maintenance, and improvement.

THE PLIGHT OF RURAL SCHOOLS

The impression given by visiting a number of old rural schools is that they should more often than not be pulled down. To an architect it is obvious that the buildings are mostly obsolete, with



Plans of two typical old rural schools.

* "General Observations on the Construction and Arrangement of Schoolrooms."

Fig. 1.—The affinity with the "barn" form which was an early model for schools can be seen clearly in this recently taken photograph. With a changed attitude to children, and a measure of informality it is a friendly enough place, but the primitive services and the overpowering scale remain.

Fig. 4.—The Board Schools, buildings which were put up after 1870 when the Government began to supplement the Voluntary Schools, maintained the latter's ecclesiastical character to the detriment of the standards of lighting and ventilation enjoyed by the pupils.

poor standards of lighting and heating and sanitary accommodation. There is often so little left that is useful, that to attempt remodelling to make them comparable with new buildings is difficult and unrewarding. Unfortunately, the structural parts of the old buildings were mostly very solidly built, and in spite of the fact that they are difficult to alter, and may not satisfy present physical standards, it takes courage for authorities to recommend that they should be demolished.

Many education officers share the view that these old schools are thoroughly unsatisfactory, and their reasons are not only that the buildings are unsuitable but also that there are often too few pupils in each school for them to work satisfactorily. It is deplorable that even now there are schools with, say, only 50 pupils, whose ages range from five to 11 years, all of whom have to be taught in one room, and where it is admitted that even a bright child will be at a considerable disadvantage by comparison with another of similar capability in a new school in a town. Indeed, it is more than regrettable that on this account country children in some districts may well be deprived of access to the grammar schools.

To solve this problem some authorities pursue a policy of closing many of the more primitive schools in a particular group of villages, and of providing one new or completely remodelled school to serve a larger area. The expenditure on the buses which are then necessary for those children who have further than two miles to come to school is considered justified, even though the need for economy in the provision of transport is recognised. Whilst this seems to be a sensible solution, it is not always popular because of the sentimental attachment of each village to its own school. Nevertheless, the authors hope that where schools are clearly quite unsuitable for modernisation architects and education officers will resist attempts to prolong their life by superficial alterations and repairs—a policy which only makes the ultimate decision to rebuild more difficult. On the other hand, there may be many schools where improvements can be made which will really bring them up to modern standards, and it is about these schools that we are mainly concerned.

Figs. 2 & 3.—A small room was often attached for infants: these photographs show one such room. One cannot fail to notice and deplore the starkness of the room—and of its services. Furniture of appropriate scale has been introduced, but the window cill remains obtrusively high.

MOE CIRCULAR No. 283

In spite of the present educational policy of having separate schools for *primary* education for children from five to 11 years, and for *secondary* education from 11 to 15, a minority of country schools still accommodate children of the *whole range of ages* from five to 15. In 1954, of all school children roughly 10 per cent. were in all-age schools.

Quite apart from dealing with the improvement of the schools for *primary* education, which is the subject of these articles, the Ministry of Education's Circular No. 283, December 3, 1954, also urges the provision of new *secondary* schools so that "the rate at which all-age schools are being eliminated should be speeded up."

"Proposals for new secondary schools still have to be included in the authority's normal building programme, but a relaxation of control has now been made, so that an unlimited number of *minor* works up to a value of £10,000 for each project can be undertaken out-

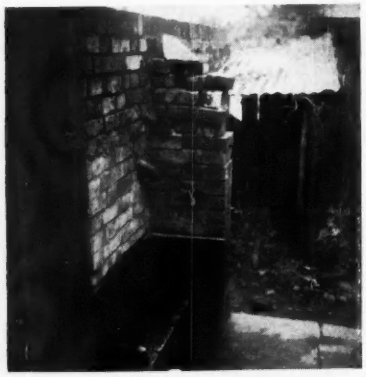


Fig. 5.

Figs. 5 & 6.—Most of the older schools have most elementary provisions for cloaks and for washing and sanitation. It is typical that the coat hooks should be out of the children's reach, and that there should be one basin only, with no running water. The photograph of the urinal and its supporting structure speaks eloquently of need for improvement.

Fig. 7.

Figs. 7 & 8.—A school serving a small community and having as a result only about sixty children, all of whom have to be in one room—even though their ages range from 5-11. The two teachers have to make the most of the almost imaginary separation into classes offered by the curtain. There is no playground for physical exercise or organised games, but attached to the school room is the teachers' house. The porch is also the cloakroom, and the chimney which comes out from it is from the one open fire which serves as heating for the school room.

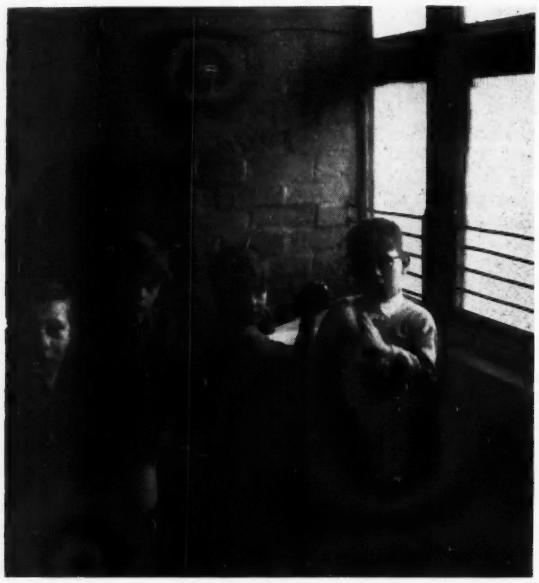


Fig. 6.

Fig. 8.

side the building programme. The intention of this relaxation is that authorities and voluntary school managers shall institute a programme of improvement in rural schools to bring them, as soon as possible, up to the present standards of building and accommodation laid down by the Ministry. These standards are set out in Statutory Instrument 1954, No.473 "Education in England and Wales: The Standards for School Premises Regulations 1954," made under the Education Act, 1944. Strict enforcement of the regulations may occasionally be considered unreasonable in the particular circumstances of an existing school, and the 1948 amending Act gives the Minister power to waive some of the requirements.

Except for the increase from £7,500 to £10,000 in the value of the individual job which can be carried out outside the building programme, the new policy of Circular 283 involves no change in the procedure for voluntary schools. All work estimated to cost more than £300 at these schools has to be submitted for the Ministry's approval. A complete guide to the procedure for obtaining approvals, loans and grants for building work at voluntary schools is contained in MOE Administrative Memorandum 456 (October 1, 1953).† This memorandum, which concerns only voluntary aided or special agreement schools, is particularly relevant, since many of the older rural schools fall into the first of these categories. The term "voluntary school" includes, however, those known as Controlled; in these cases control of the use of the premises of the school has passed to the local education authority, while the ownership of the buildings and certain other rights remain with the Church. From the architect's point of view controlled schools are treated as to finance and approvals in the same way as county schools.

EXPENDITURE ON VOLUNTARY AIDED SCHOOLS

From the architect's point of view, the sharing of the cost of building works between the State and the managers of an aided school presents some difficulty. If called upon to do work for this kind of school, he should know that the capital costs are shared equally between the MOE and the managing body, except for playing fields, the medical inspection room and the kitchen, which are paid for out of public funds. It is also as well to know that the outside of the building is repaired and maintained by the managers and the inside by the LEA.

Private architects will probably have much of the work to do since the county architects and their staff will be engaged on the larger schemes, and also because many of the schools come into the Voluntary schools category and the managers will wish to appoint their own architects. Many managers may have had little to do with school work, and therefore have had little experience of the administrative procedure, and although it may be argued that it is not, strictly speaking, the architect's business to advise his client as to what he may or may not have, it is nevertheless clear that if he has knowledge of all the regulations it will help to get the work done with the least amount of confusion and delay, and with understanding between the managers and the LEA.

The nature of the work which will have

† 3rd amendment, December 18, 1954.

to be done—that is, repairs, redecoration, adaptation, minor additions and so on—is such as is sometimes difficult to detail and to specify with accuracy; it also requires much supervision whilst in progress. Nevertheless, most authorities will require full sets of drawings and specifications and bills of quantities, however difficult it may be, and will regard their accurate preparation as more important than the obtaining of a large number of competitive tenders. It might now, in any event, be difficult to obtain many tenders for this kind of work since most builders are, at present, quite fully committed, and in remote parts there may be only a restricted number of builders who are capable of carrying out the work. In this respect, it would be as well for the architect to ensure that the firms chosen can not only build satisfactorily but can cope with the office work.

Nevertheless, whenever possible, the architect should try to obtain three or four genuinely competitive tenders, and if the work is such that the extent of even a large part of it cannot be foreseen and accurately described in the specification, the authorities are still likely to require the architect to obtain competitive estimates for such parts as are straightforward, with provisional sums included for the remainder. "Cost plus" contracts are frowned upon unless there is absolutely no alternative.

In this article we have sketched the background on to which the improvements which the Ministry is now urging will be grafted. In future articles we will discuss more specifically how to make the existing buildings conform as far as possible with present standards, and how the administrative part of the work has to be organised.

(to be continued)

The authors wish to acknowledge the facilities put at their disposal by Mr. H. Conolly, FRIBA, County Architect, Essex County Council, and the valuable help of Mr. W. C. Primmer, MA, MEd, Divisional Education Officer, Mid. Essex.

The drawings and photographs are by the authors.

THE MODULAR CATALOGUE

The First Issue

THE MODULAR SOCIETY has issued a Catalogue in which are presented a first collection of building components that are available generally and have appropriate external dimensions in whole multiples of the basic module of 4 in. measured to centres of joints or jointing members. With this first issue, which consists of introductory material and 10 sheets of products, there is also provided a loose-leaf binder for the first volume which eventually will comprise about 100 sheets. These will be issued serially from time to time as convenient. The initial 10 sheets relate to proprietary products and cover steel framework, curtain walling, building boards, precast concrete cladding slabs, suspended ceilings, partition blocks, structural wall and partition panels, and structural roof panels.

The Modular Catalogue is issued serially from time to time to all subscribers to the Modular Society free of charge. Further details are obtainable from the Modular Society, Ltd., at 22, Buckingham-street, London, WC2.

HERTS SCHOOL BUILDING

The Minister's Comments

SPEAKING at the opening of Ravenscroft Secondary Modern School, Barnet, on January 17, the MINISTER OF EDUCATION (Sir David Eccles) said that at the Ministry of Works they had followed with admiration the school-building programme and not least the achievements of the Hertfordshire County Council. He had often encouraged the Ministry's architects, who were hoping to build post-offices, labour exchanges and so on, to have a look at what Hertfordshire was doing, but never did he think he should have the privilege of celebrating on the site the double event of Hertfordshire's 100th post-war school and the attainment by the County Architect of the highest position in his great profession.

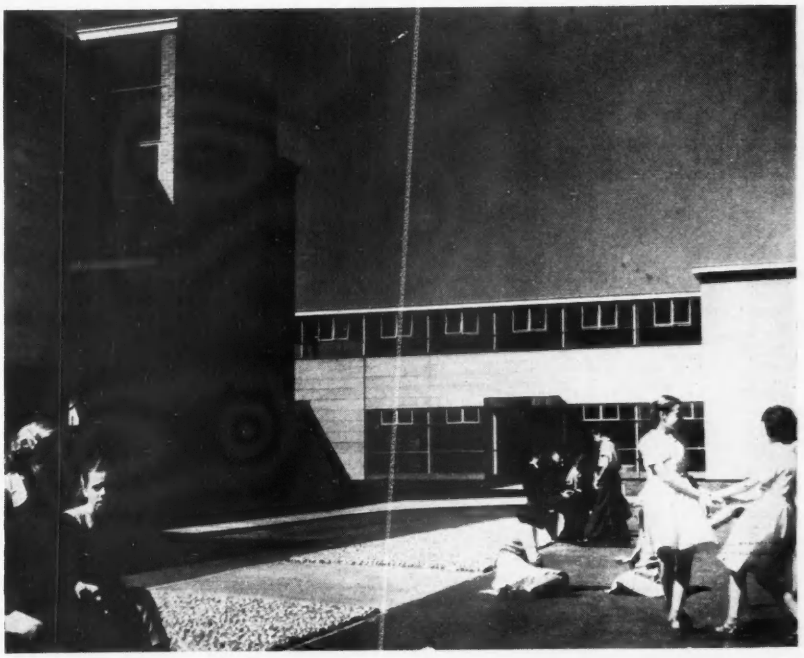
DOCTRINE OF TEAMWORK

"Why did the Ministry of Works admire the new Hertfordshire schools?" continued Sir David. "The first answer is that your County Council was practising the doctrine of teamwork which we were trying to put across the whole of the building industry, and your example was invaluable in my exhortations. I had found the building industry made up of too many separate components who had an annoying habit of using each other as alibis for anything that went wrong. The obvious remedy was to pull the team together, to get them round the table and plan carefully before going on to the site, and to make quite sure who was in charge of the operation. I had no doubt that the architect was the man to lead the team, and I struggled away trying to get all kinds of building owners to have confidence in their architects both as artists and as the heads of a group of surveyors and builders all intent on putting up a good building in the shortest possible time.

MODERN ARCHITECTURE

"The second reason why we admired you was that you were creating a modern style of architecture, and a generation which can produce its own style in building is a generation which will get into the history books. A hundred schools costing upward of £12 million, famous for their artistic merits, their efficient and economic use of modern methods and materials, their successful fulfilment of their educational purposes—this indeed ranks as a national achievement.

"You will not forget that the private building owner has been restricted for years by the building controls, so much so that some exuberant people in Local or Central Government circles have talked as if the private patron were dead and gone. This is nonsense. The private building owner is free again and he will profit by your privileged start in building after the war. He also will give architects many chances to create a modern style, and we must look forward to learning from their work on factories, offices and other buildings. Speaking to Mr. Aslin, not as your County Architect but as President of the Royal Institute of British Architects, I hope he will encourage Local Authorities to make use of private architects so that the reorganisation of all-age schools in rural areas may be completed within the time which I have set."



RAVENSCROFT SECONDARY SCHOOL, BARNET.—This school is the hundredth post-war school to be completed by the Hertfordshire County Council. It was opened by Sir David Eccles, KCVO, Minister of Education, on January 17. Details of the new schools are published by the Hertfordshire County Council in an illustrated booklet entitled "A Hundred New Schools—School Building 1948-1954." The County Architect for Hertfordshire is Mr. C. H. Aslin, CBE, PRIBA.

CORRESPONDENCE

RENFREW AIRPORT BUILDINGS

To the Editor of *The Builder*

SIR,—Illustrations and particulars of new buildings are usually unaccompanied by much explanation of the aesthetic motives which went to the birth of the design, though occasionally the constructional or use-factors which moulded the design are stated.

In the case of the Renfrew Airport buildings illustrated in your issue of January 7, an unusually full explanation is given, and as this throws a searchlight on certain aspects of architectural thought and tendencies of to-day it should not be allowed to go unchallenged.

If this necessarily involves criticism of the building, this does not mean that it is offered with anything but constructive motives. Perhaps this is not in good taste, but there is little criticism today except when the RA hangings are slanged.

Few are likely to object to the remark that "it was decided the solution lay in the provision of a light skeletal (!) structure of reinforced concrete" as this is an obviously good one, though one wonders about the word "light." (Mr. Gibberd's control tower at London Airport does not seem to be a "light skeletal structure," and has a Dutch weighty massiveness.)

It is not clear why the buildings should have to "float" on pads, and I "pass" the enchanting reference to "aquatic insects such as the water spiders."

Apart from a presumed desire to adopt an unusual structural form (in this case like an upper denture) one can see no need for the shape imposed on the concourse roof. It seems a costly expedient if it needs an external arch to help "support and steady" it.

If this theory is right and it needs thus steadying and supporting at the front then many architects must have spent an anxious week-end wondering whether their proud frontages of glass and steel had floated up, blown aside or fallen down. One would have supposed that a deeper concrete frontal beam would have served the purpose.

It is stated that "when a choice could be made between aesthetics and utility *preference was given to the former.*" Fie upon you, Mr. Modern!

The naive statement is made that "the architect considered it *more important* to impress a strong design-form on the mind of ground and air observers than to provide a purely utilitarian method of enclosing a given volume of space."

This idea, curiously enough, had occurred to Bramante, Wren and many others. It *used* to be the thing to do—to find pleasant forms to clothe the bald facts.

One trouble today is that it is often difficult to know whether we are looking at a store, a hospital, a school, or a church. They all have the same "light skeletal" appearance, the air almost vibrates to the rattle of bones.

To an elderly architect like myself the main entrance of Renfrew Airport suggests the gateway to a Building Exhibition, the various discordant and uncorrelated elements recalling arch and beam construction and so forth. Even so, I find it hard to accept the old-fashioned aeroplane modelled in concrete and standing astraddle the main doors.

"I must say I deplore this piecemeal architectural clothing of the City!"

And what is "steadying and supporting" the front of this? As for the arch——

KENNETH GROVER [FRIBA]

Beadnell, Northumberland.

ARCHITECTURE AS AN ART

To the Editor of *The Builder*

SIR,—Mr. Morgan's letter in your issue of December 31, in which he says that architecture cannot be taught as an art, should not be ignored, because it voices the opinion of the majority of the architectural profession. If his opinion is correct, then there is no problem confronting the schools of architectural design; they have so far failed to produce any artists and they can proceed with their usual and, in the case of a few schools, very sound methods of producing good-looking designs which will build well. This procedure will eventually reduce the profession to being commercial designers (a symptom already with us), and it should be made clear to the student that this training has nothing to do with art.

Mr. Morgan says that other civilisations produced only a handful of geniuses, yet in Florence (a town smaller than Oxford) there were, by chance, Michelangelo, Leonardo da Vinci, Botticelli, Filippino Lippi, Piero di Cosimo, Rosselli and Guiliano da San Gallo to decide on the siting of the David. At the same time Padua, Venice, Sienna and Rome contained artists of similar quality. (As my reference book says, "it was an extraordinary way to decide" and it shows the primitive methods under which these people worked without the help of panels of "experts" to tell them what to do.) It is difficult, in the light of history, to think that the Greek, Gothic and Italian artists did not know a method by which genius could be produced.

Before we finally decide that a training for art is impossible and resign ourselves to mediocrity, I am sure we should re-examine the situation again, and try to see the problem without the crushing superstitions and false associations with which art is constantly presented to us. For example, expressions like "the modern movement," "the next logical step in contemporary design" or "art springs out of the right social conditions" have nothing to do with art; a very short reference to history shows quite clearly that the quality of art is unchanging, illogical and is definitely not the product of any special society. Students studying art never read the letters and notebooks of the old masters, the only authentic knowledge. Yet any non-creative "expert" is read without question. The same student learning how to play cricket would disregard with some contempt the opinion of anyone who has not and never will know the feeling of hitting a ball.

Art is a very simple thing, which is quite easily examined. The artists, by whom the creative work was executed, have written their experiences of what happens during the act of creation. Both the quality of creative art and the method or act of creation are facts which can be checked and verified. To show these facts to the student is simple, but unfortunately these facts, like any other knowledge, are useless to the student until he knows them as his second nature.

To teach, it is necessary for the teacher to know, and for the student to be able to learn. It is already a well-known fact that the student world is composed of about 20 per cent. who can understand and know creative art. Of this percentage only a few possess the necessary strength of character, but there is no doubt that some can be trained.

A. C. COTTON [ARIBA]

16, Lawrence-street, SW3.

WATER HAMMER

To the Editor of *The Builder*

SIR,—I was interested to read in your issue of January 7, page 26, that the closing thrust valve can be increased by fitting a larger size ball. Surely to close the valve a certain thrust is necessary and it is immaterial whether this thrust to achieve closure is provided by a large or small ball? Although a bigger ball will decrease the amplitude of oscillation, the size to which the ball can be increased is limited by cost and practical considerations.

In my experience an effective method of preventing water hammer is to fit a plate under the ball. This can be easily done by suspending half a copper ball, open end upwards, under the ball so that it is under the water surface during the period that the valve arm is moving. The damping effect prevents the knocking.

P. R. DAWSON

73, Oaken-grove, Maidenhead.

OBITUARY

G. R. C. Harding, ARIBA

THE DEATH has taken place at Lincoln of Mr. George Robinson Cuthbert Harding, at the age of 80.

MINISTERS' SECRETARIES

MR. DUNCAN SANDYS, Minister of Housing and Local Government, has appointed Mr. A. Sylvester-Evans to be his Principal Private Secretary. Mr. William Deedes, Parliamentary Secretary to the Ministry, has appointed Mr. L. B. Grimshaw to be his Private Secretary.

View from the east.

CHURCH OF ALL SAINTS, OXHEY PLACE, WATFORD

Architects
SEELY & PAGET, F/LRIBA

Quantity Surveyors
HORACE W. LANGDON & EVERY

Consulting Engineer
C. V. BLUMFIELD, BSc(Eng), MICE, MIStructE.

Builders
JAMES CARMICHAEL (CONTRACTORS), LTD.

THE church forms part of a scheme which, in its completed form, will consist of three new buildings grouped around a seventeenth-century chapel, the chapel forming the central motif and linked to the buildings on either side by a memorial cloister.

The chapel itself is of considerable historical interest, having been built in AD 1612 by Sir James Altham, one of the Barons of the Exchequer. A building was first erected on this site in AD 793 by King Offa and restored in AD 1007 by King Ethelred.

The new church, being the first stage of the ultimate scheme, has been designed as a parish church with seating for 250 people, including a small choir. It will be possible, if required in the future, to extend the aisles outwards in order to raise the seating capacity. Vestry accommodation is at the east end of the church and the falling level of the ground has lent itself admirably to the provision of a Lady chapel over these vestries behind the high altar.

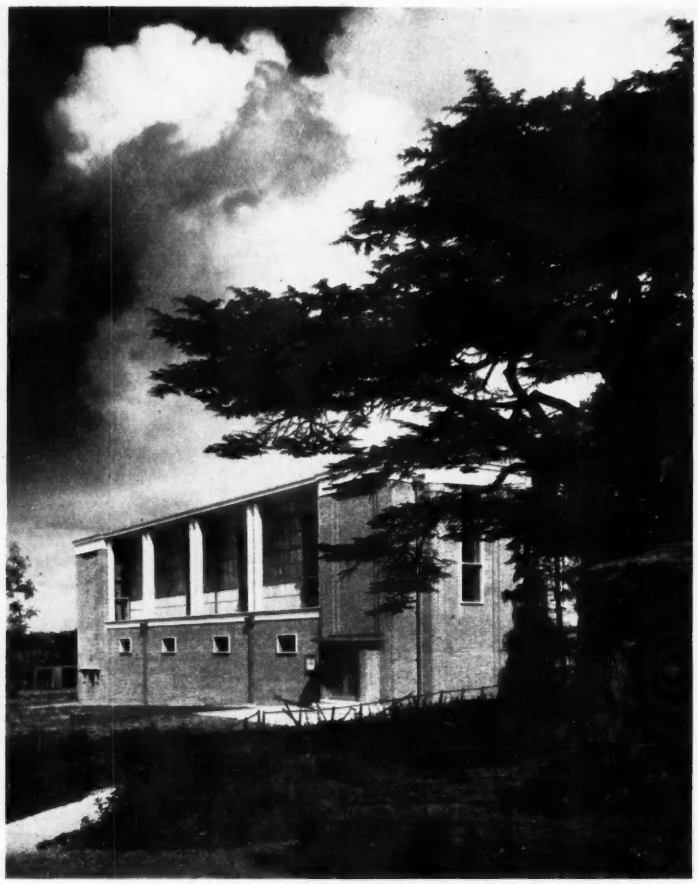
The interior design of the church is simple in character and provides a suitable setting for the altar and a hanging rood, suspended from an acoustically treated barrel-shaped roof.

A pipe organ, much of which is over 100 years old, has been transferred from the chapel of Shrodells Hospital and, after thorough cleaning and renovation, has been installed at the west end in a space specially provided over the north entrance porch.

The exterior of the church has been designed in the contemporary manner, although restraint in this direction has been exercised in order to strike a balance between the post-war buildings on the estate, in particular the adjoining school, and the seventeenth-century character of the old chapel.

From the structural point of view, perhaps the most interesting part of the design is the roof which consists of a 2½-in. thick curved shell of reinforced concrete with edge beams supported at intervals upon brick piers which divide the nave from the aisles. This reinforced concrete shell roof is clad externally with aluminium sheeting and internally sprayed with asbestos fibres to form a 1½-in. thick coating for acoustic reasons.

Externally, the east end bears a large cross formed of exposed aggregate panels which, because of its scale and texture, can be seen from a considerable distance.

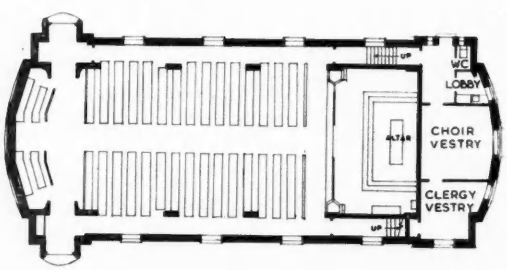


View from west.

The artist for the hanging rood was Mr. B. D. L. Thomas, and for the altar cloths, Mrs. Mary Ozanne. Following is a list of sub-contractors:

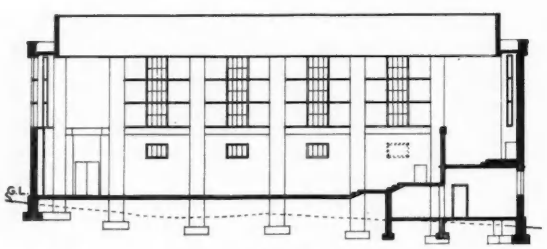
Steel suppliers, McCall and Co.; semastic flooring, Semtex, Ltd.; artificial stone, Marriott and Price, Ltd.; ironmongery, Nicholls and Clarke; communion rail, pulpit and lectern, James Walker, Ltd. ; metal windows, C. E. Welstead, Ltd.; fibrous plaster work, G. Jackson and Sons, Ltd. ; electrical installation, A. Dean and Co.; Celotex tiling, Horace W. Cullum and Co.; asbestos spray, Newalls Insulation Co.

Sewer connections, Unit Construction Co.; asphalt, Durable Asphalte Co.; aluminium roofing, Builders Iron and Zincworks; sand blasting, London Sand Blast Co ; circular metal staircase, candle brackets and supporting rods for rood, Culford Art Metal Co.; hassocks, Aumbry safe, J. Wippell, Co., Ltd.; carpet, Waring and Gillow, Ltd.; renovations to existing organ, Kingsgate Davidson, Ltd.; facing bricks, Sydney A. Hunter, Ltd.

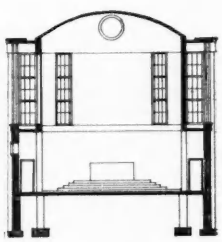


PLAN AT GROUND FLOOR LEVEL

Scale of Feet 10 5 0 10 20 30 40 50



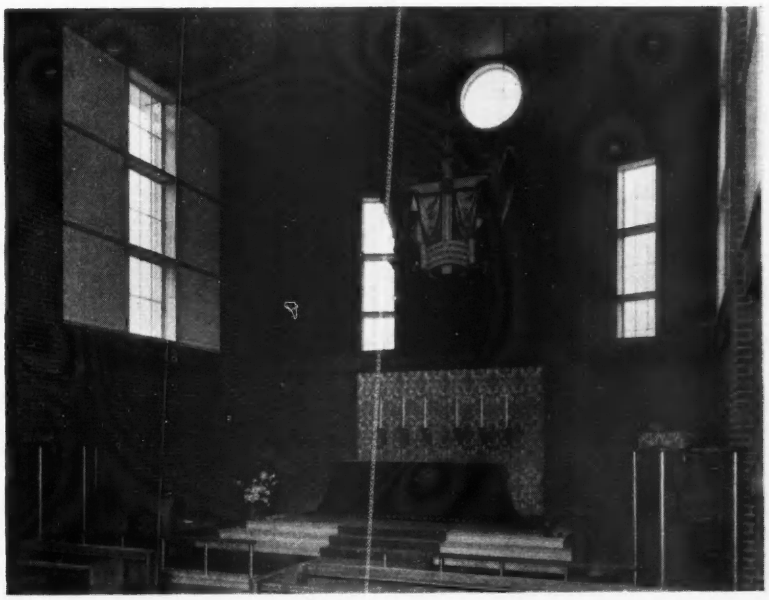
Long section.

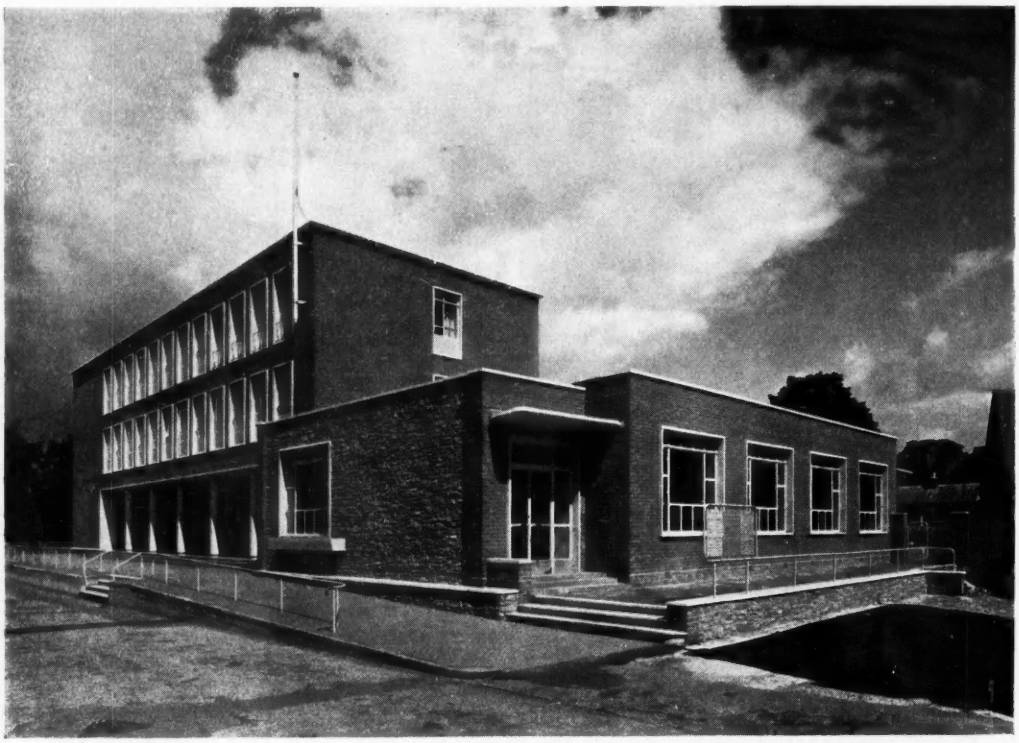


Cross section.

General interior view. Below : View towards altar.

CHURCH OF ALL SAINTS, OXHEY PLACE, WATFORD





View from south, showing main entrance.

CROWN OFFICE BUILDING, BRADFORD STREET, TONBRIDGE

Senior Architect, Chief Architect's Division, Ministry of Works
E. H. BANKS, FRIBA, FRSA

Senior Engineer (MOW)
A. M. PALMER, BSc, AMIHVE

Senior Structural Engineer (MOW)
G. H. STEWART, MIStructE

Quantity Surveyors
C. D. WALFORD & PARTNERS

Clerk of Works
S. S. SUTTON

Builders
J. C. ELKINGTON, LTD.

THIS block of Government Offices is one of a series of post-war structures designed expressly to house several departments in efficient relationship to each other, and in the most economical manner within one building. In this instance, it has been possible to give expression to a changed policy on the location of Crown Office buildings by siting the block in an area scheduled as a future civic centre rather than in a little-frequented back street.

The main block is three storeys in height, the single-storey eastern wing being designed to permit of extension by future additional floors if required. The ground floor is devoted mainly to offices visited by the public, the Ministry of Labour Employment Exchange being housed at the eastern end of the building with entrances for men and women respectively at opposite ends of the wing.

View of public space in east wing.

View of public space in west wing.

Two entrances on the south front give access respectively to : Ministry of Pensions and National Insurance offices at the western end of the building for both staff and public ; and at the east end, to Ministry of Labour and National Service offices for staff.

The first floor provides office accommodation for both Ministry of Labour and Ministry of Pensions and National Insurance, with a tribunal room and waiting room. The second floor at the west end is devoted to offices for the Board of Inland Revenue, welfare rooms and a small staff mess room and kitchen.

The walls principally consist of 13½-in. brickwork on a plinth of Bargate rubble stone. Rubble stonework is also employed as a facing for the recessed wall of the framed loggia on the south elevation where it forms a satisfactory foil to the circular concrete columns, and is used for the " panel " wall on the south side of the eastern single-storey wing.

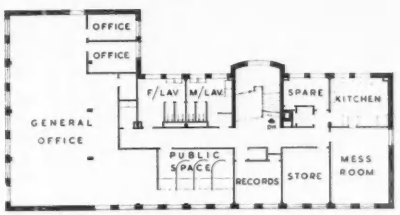
Natural stone surrounds to window openings also enclose fluted aluminium-sheeted panels below the cills. Shaped concrete window boxes to the larger ground-floor windows relieve the geometric formality of the fenestration pattern.

Floors to public spaces are in thermoplastic tiles, floor finishes to offices generally are linoleum. Flat roofs consist of three-layer bituminous felt covered with asbestos tiles bedded in bitumen. Top lighting is provided by glass dome lights.

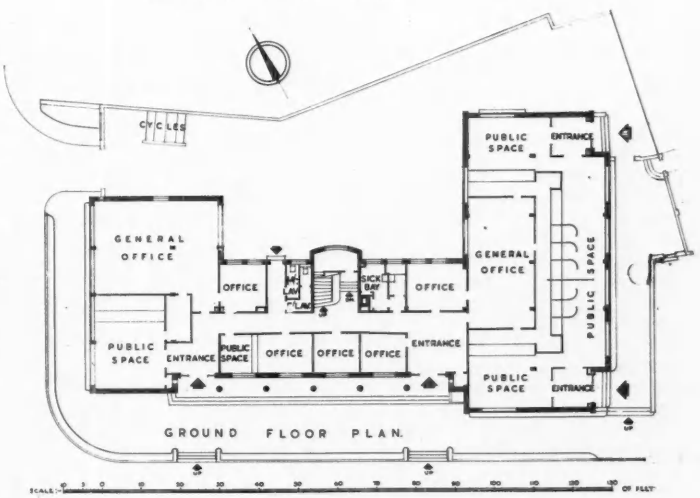
The building is steel framed and the stanchions are carried on mass concrete block foundations. The walls stand on mass concrete strips cast *in-situ*. Heating is provided by hot-water radiators from coke-fired boilers with automatic damper control. Following is a list of sub-contractors and suppliers :—

Structural steelwork, Smith Walker, Ltd. ; asphalt tanking, Neuchatel, Ltd. ; metal windows and doors, C. E. Welstead, Ltd. ; H. T. floors and roofs, Kleine, Ltd. ; electrical installation, G. E. Wallis, Ltd. ; felt roofing, Ruberoid Co., Ltd. ; heating and h.w., F. Haydon, Ltd. ; terrazzo pavings, etc., Diespeker, Ltd. ; pat. comp. floor tiles, Neuchatel, Ltd. ; balustrading, etc., Hyders, Ltd. ; glass blk. windows and dome lights, Lenscrete, Ltd.

Flush doors, Linden Doors, Ltd. ; pavings, C. A. Johnston (Aylesford), Ltd. ; notice plates, Remploy, Ltd. ; flagstaff, J. W. Gray and Son, Ltd. ; cycle stands, Alfred A. Odoni and Co. ; permanent fencing, Fencing Co., Ltd. ; bricks, Hall and Co. ; locks, doors, furniture, Josiah Parkes and Everite and Co. ; paints and painting, Walpamur and Co. and Inertol Co. ; plastering, E. E. Cheeseman & Sons, Ltd. ; stonework, Walton Gooddy, Ltd.



SECOND FLOOR PLAN



GROUND FLOOR PLAN.

CROWN OFFICE BUILDING, BRADFORD STREET, TONBRIDGE

A terrace of three-bedroom houses faced with common bricks finished with stone paint. The brick screen wall in the foreground conceals the back gardens of an adjoining terrace.

POTTER STREET NEIGHBOURHOOD, HARLOW NEW TOWN

Architects
ROBERT HENING, MBE, & ANTHONY M. CHITTY, FRIBA

Assistant Architect
H. DUCKETT, ARIBA

Builders
W. & C. FRENCH, LTD.

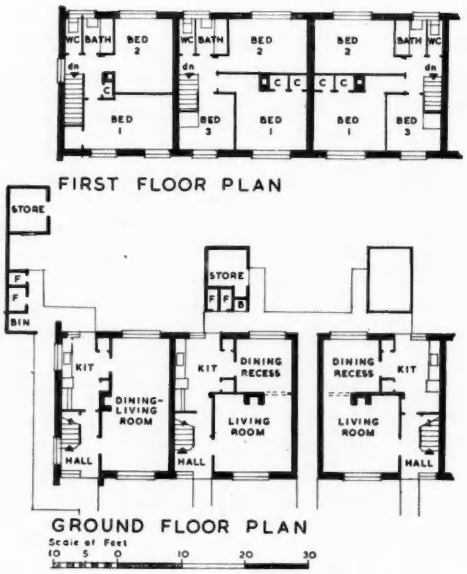
POTTER STREET is a rather straggling village stretching along a dip in A11 (the main Cambridge road, which will later be diverted). With its surrounding land the village forms the south-eastern area of Harlow New Town. The architects were asked in February, 1952, to plan and build a thousand dwellings, complete with sewers, roads and all services, garages, tenants' common rooms, and accommodation for old people. Work began in September, 1952.

Eleven house types are included, some of these being existing Harlow plans. At the Ministry of Housing's request a high density has been achieved—about 16 dwellings to the acre overall. In one area 17½ dwellings have been sited to the acre by using a continuous built-up façade with two-storey flats at the corners and a 4-bedroom house at internal corners.

The contract (nearly £2 million) is of interest, being virtually a " lump sum contract." There were to be no pc sums, and no variations, only labour and material fluctuations being allowed. Work is nearly complete.

The landscape and garden work amounted to about £5 per house, and was designed by Miss Sylvia Crowe.

The Essex clay is extremely difficult and the presence of substantial quantities of sulphates made



House plans of a typical terrace.

In the internal angle formed between two terraces, a special four-bedroom house enables the street facade to remain unbroken. The entrances to left and right are to standard terrace types and the entrance on the centre takes up all the street frontage of this special house ; front door, back door and fuel store are all entered from this wide porch.

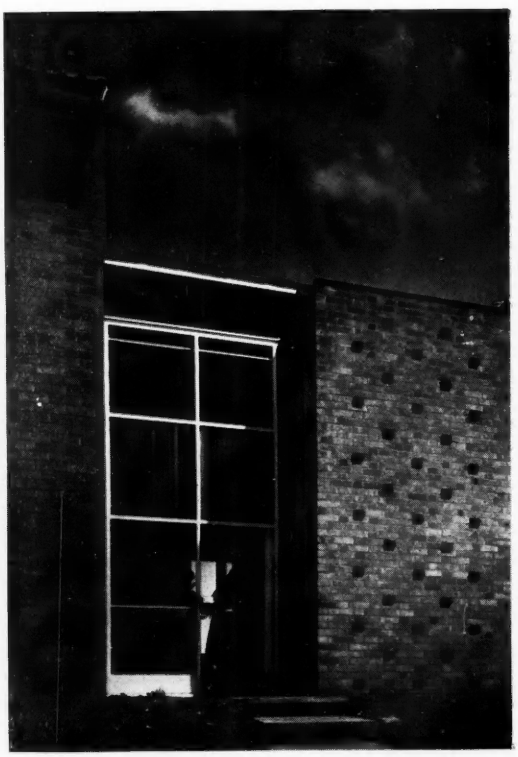
Ends of terraces are sometimes terminated with the four-bedroom house which projects in this view. The wide entrance porch gives access to the front door, the back door, and the fuel store.

In the projection behind the patterned brickwork there is a common staircase to the flats of a corner unit.

GROUND FLOOR PLAN

Plan of a corner unit.

Below : The external angles of terraces of houses are in many cases joined with "Corner Units" each of which comprises four flats ; the common entrance to these flats is seen in this view.



special foundations necessary for sewers and houses. Following is a list of sub-contractors and other firms associated with the scheme :

Plastering, A. Charldwood and Sons, Ltd., and B. L. Butcher and Sons, Ltd.; plumbing, J. C. Toogood, Ltd., and A. Scull and Sons, Ltd.; painting, Jenner Bros. (Ilford), Ltd.; glazing, Aygee, Ltd.; electrical, Electric Contracts (London), Ltd., and Stevenage Electrical Engineering Co., Ltd.

Roof tiling, L. Whittaker and Co., Ltd.; felt roofing, W. Briggs and Sons, Ltd. ; floor tiling, Marley Tile Co., Ltd. ; pitchmastic flooring, Associated Asphalte Co., Ltd.; fencing, Penfold Fencing, Ltd., and Permafence, Ltd.; hardwood flooring, S. Bennett and Son (Wood Flooring), Ltd.; landscape gardening, E. Doe and Sons (Contracts), Ltd., and John Waterer, Sons and Crisp, Ltd.

POTTER STREET NEIGHBOURHOOD, HARLOW NEW TOWN

News of the Week

FOURTH IUA CONGRESS

THE Fourth Biennial Congress of the International Union of Architects will be held in The Hague from July 11 to 16. The main theme of the Congress is to be "Housing from 1945-1955," considered under three headings—Programme, Projects, Production. Detailed questionnaires on this subject have been circulated to the member nations of the IUA and the material thus obtained is to be published in book form. Copies of the preliminary notice giving further details of the Congress are obtainable on application to Mr. P. S. Winterson, Secretary to the UK Committee, IUA, c/o RIBA, 66, Portland-place, W1.

NATIONAL PARKS

THE Yorkshire Dales and Exmoor, which became National Parks in 1954, bring the number of such Parks to eight (total area 4,380 square miles) and the National Parks Commission are discussing with local authorities the designation of the Brecon Beacons and a part of Northumberland. National Parks previously designated are the Peak District, the Lake District, Snowdonia, Dartmoor, the Pembrokeshire Coast and the North York Moors. The Commission's fifth annual report, published on December 22 (HMSO, 3s. 6d.), reviews the work of their first five years, i.e., their designation of these eight National Parks, their reports upon four long distance routes (five with Offa's Dyke, on which they reported in October); and their many negotiations on development proposals in beautiful areas. The Commission intend soon to designate the first areas of outstanding natural beauty and are extending publicity for the National Parks.

During the year, the Commission have dealt with more than 1,500 problems referred to them, including mineral workings, Services land requirements, afforestation proposals and electrification schemes. In the great majority of electrification schemes, the park planning authorities and the Commission have been able to reach agreement with the promoters. The Commission report slow progress in the creation of new rights of way on the long distance routes so far approved by the Minister of Housing and Local Government.

The year's work by the park planning authorities has included provision of further caravan sites, camping sites and car parks; clearance of unsightly developments and derelict buildings; removal of unauthorised advertisement signs; tree planting and tree preservation; and provision of hostel accommodation.

Steps being taken by the Commission in conjunction with the park planning authorities to publicise the National Parks more widely include the preparation of guide books, adoption of National Park signs for use at the approaches to Parks; film strips, posters, countryside conferences and press articles. The Commission hope thus "to register the National Parks in the public mind, especially in the minds of young people."

CEILING HEIGHTS

A "NO ACTION" decision has been taken by the standing joint committee of London borough councils on complaints about the Housing Ministry's decision to decrease from 8 ft. to 7 ft. 6in. those ceiling heights permitted in top floor rooms of new council houses. The committee had been asked by Greenwich Borough Council to make strong representations to the Ministry for the removal of this restriction. The Council suggested that the reduction had apparently been prompted by financial considerations, and not those governing living conditions.

The standing joint committee made inquiries of member councils about the matter and found that the balance of opinion disclosed did not warrant making representations.

CATHEDRAL TAPESTRY

THE Chapter and Council of Coventry Cathedral have given final approval to Mr. Graham Sutherland's design for the tapestry in the new Coventry Cathedral. The cathedral reconstruction committee approved the design in December.

Mr. Sutherland expects to take between two and three months to put the finishing touches to his design.

FROM "THE BUILDER" OF 1855

Saturday, January 20, 1855

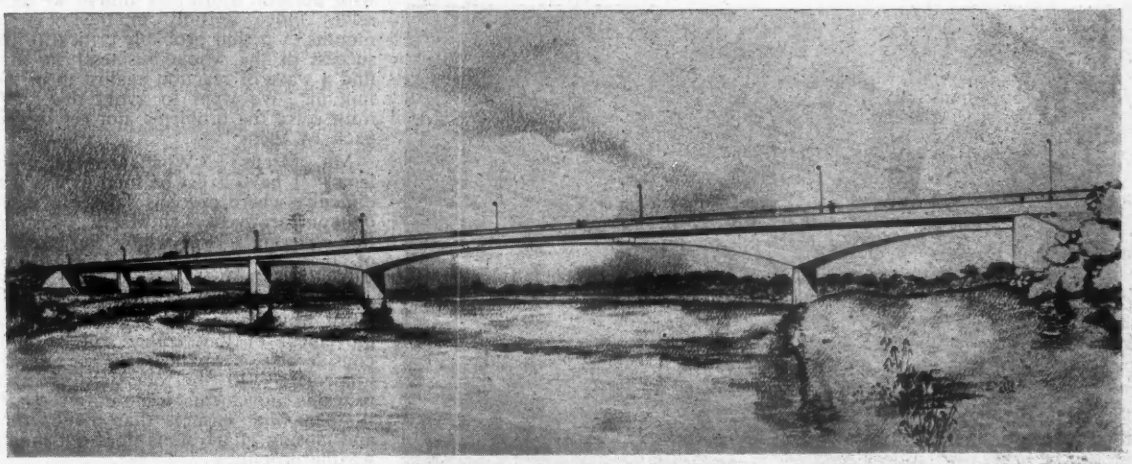
BUILDINGS BY WHOLESALE. — I think that any one who reads the newspapers at the present time cannot have failed to notice the extraordinary celerity with which the wooden houses intended for our army in the Crimea have been prepared, packed up and despatched for their destination. Now, for the future, might not the same plan be adopted for all wooden outhouses, barns and sheds in our English farm-yards. Imagine the saving of trouble and expense if such sheds, instead of being sawn out by our village carpenters, were, on the measurements, etc., being given, at once sawn out and sent away with all the despatch that one of our great saw-mills is capable of. Again, for ordinary houses, all the woodwork might be prepared in this way, the stone, bricks and rough materials being furnished on the spot.

PROFESSIONAL ANNOUNCEMENTS

BERKELEY L. MOIR, FRIBA, AMTPI, and W. HELEN MOIR, ARIBA, have opened an office at the Prudential Buildings, South Parade, Rochdale (tel.: 48386) and are practising as MOIR AND BATEMAN, F/ARIBA, chartered architects and town planning consultants.

MR. C. M. HUNT, FRICS, having recently inherited his family practice, Messrs. Waring & Nicholson, architects and surveyors, of 38, Parliament-st., Westminster, SW1, has relinquished his partnership in the firm of Thurgood, Son & Chidgey, chartered surveyors, as from December 31 last.

MR. W. E. S. PARMENTER, ARICS, 12, New-ct, (third floor), Carey-st., WC2 (tel. Holborn 3527, ext. 3) has now commenced in private practice as a chartered quantity surveyor.



CLIFTON BRIDGE, NOTTINGHAM.—This new bridge has been designed to cross the River Trent at Nottingham to cope with the steadily growing traffic, which has been accentuated by the construction of the new Clifton housing estate on the remote bank of the river. It gives facilities for a 22-ft. carriageway, a 9-ft. cycle track, and a 6-ft. footpath, and will form one half of a future dual carriageway bridge. The works are under the direction of the City Engineer for the Nottingham Corporation, Mr. R. M. Finch, OBE, MICE. The consulting engineers for the main bridge are R. Travers Morgan and Partners. The resident engineer for the works is Mr. J. C. Adamson, BSc, AMICE. James Miller and Partners, Ltd., are the builders.

DRY CONSTRUCTION

Need for Co-ordination Between Manufacturer, Architect and Contractor

A "COLLOQUIUM" on the subject of Dry Construction was introduced by Mr. W. A. Allen and Mr. Edward D. Mills at the Building Centre, London, WC1, on January 10. The meeting was arranged by the Cape Asbestos, Ltd.

Mr. Peter Trench, OBE, was in the chair.

MR. EDWARD MILLS opened his talk on dry construction in multi-storey buildings, walls and partitions by saying that Mr. Allen and he had decided to limit themselves to three particular fields, the question of curtain walls, dry construction ceilings and dry construction partitions. Dry construction was not a technique developed in the last few years, he said. It originated before the war, its progress was accentuated during the war and it had now found its rightful place in our building techniques. It was not as simple and easy as one might expect, however. Already builders, architects and others using dry construction techniques in multi-storey construction were finding snags.

PROBLEMS IN US

Perhaps one of the biggest developments in dry construction had been in the United States, and those who had visited the US had found that problems arose there where this dry construction was adopted, and that the buildings in which it was used were not always as beautiful as the photographic illustrations in *Forum* would suggest.

Mr. Mills continued: "Before speaking particularly on curtain walls I would like to make some general remarks which concern, primarily, the lack of co-ordination which arises, at the moment, between manufacturers and the architect and contractor when these dry techniques are used. When one decides to use a particular form of dry construction for ceilings, walls or partitions one often finds, to one's dismay, that much of the data and the problems which one has been led to believe have been seriously considered and solved have, in fact, not been looked at or tackled at all. Many proprietary systems have to be quite considerably adapted when they are applied to a particular building programme or job. The specialist sometimes does not know what happens 'round the corner'; admittedly, the architect sorts it out, but one feels that ought to have been dealt with at an earlier stage. Before some proprietary systems are put on the market as the solution to all problems more study should be given to difficult problems; they should not be shelved and put aside. In some cases we find some problems have not been understood."

He had been particularly impressed (said Mr. Mills) by the amount of service rendered in America by the sub-contractors and specialist contractors in relation to dry construction. Those who had seen working drawings of the United Nations building and the complicated nature of the panel and curtain wall system used there would realise that practically all the detailing was carried out by a specialist contractor. The architect merely acted as consultant to the sub-contractor. Admittedly the problem was still there and difficulties still arose; but a great deal of work was done by the sub-contractor, and his knowledge of experimental work and his experience on smaller-scale jobs was of considerable value. That sort of approach could be applied here. While we often felt chary of experimenting upon our client, manufacturers should feel chary of experimenting on architects!

Dealing with the first of the major problems which was to be discussed, the question of curtain walls and dry construction, perhaps the greatest experiments in curtain walling had been carried out in the US. Well-known examples were the UN building, the Lever building and the General Motors technical building in Detroit, designed by Saarinen. Each of those buildings had been widely illustrated and each had produced much evidence and data on which we could work. Each building had shown very serious problems and in each case serious failures. That was the natural outcome of any large-scale experiment, particularly when one realised the tremendous size, for example, of the façade of the UN building. It would have been quite remarkable if a curtain wall of that magnitude could be erected without something going wrong. Something did go wrong and American architects were seriously considering abandoning the use of curtain walls because they were scared of the problems which have arisen. So far as we in Great Britain were concerned, our natural ability to accept problems as part of our daily life, and to deal with them, would help us to take the difficulties and work to find a way out.

MR. W. A. ALLEN: "That is one of the main points we must watch at this moment in history. We are rather assuming that the Americans are the experts in curtain wall construction and that we are tearing along trying to catch them up. We are doing nothing of the sort. Americans are no more expert in curtain wall techniques than we are, and some of that work in America has been done by British exporters. Some of the simplest and best have been timber curtain walls, just *ad hoc* curtain walls, particularly, for example, the prefabricated Harvard Physics Laboratory. The Americans are good at developing a thing like this but sometimes they get 'foxed' by the considerable problem that arises of organising a technological attack upon the difficulty.

A CRITICAL PERIOD

"As Mr. Mills will make clear, such an extraordinary range of difficulties arises with curtain walls that unless we ourselves move sensibly in the next 18 months (a period probably critical to the success of the whole business) we may find a wave of reaction against them setting in. We want to avoid that. We must solve the problems, not get pushed back by them."

MR. MILLS: "What are the problems? I have a list of them. The first difficulty where one has a large expanse of comparatively lightweight construction covering a large area is the problem of thermal movement and expansion. With a building which is 25 storeys high and 150 ft. long, built up of small units, all of which will move slightly, the total movement of that frame will be quite considerable. That leads me almost immediately to the question of what restrains movement. If nothing restrains it, then what ensures that the opening and closing of the units does not impair weatherproofing?

"If you have a large curtain wall, a large area of frame structure which will open and close very slightly over a big surface, that forms an obvious path for the entry of moisture. Perhaps the biggest difficulty with the UN building

UN BUILDING, NEW YORK. This view shows a window-cleaner at work.

was the problem of water penetrating through the framing, due partly to the peculiar physical condition of the site, with strong winds blowing across the East River and moisture-laden air being shot up the face of the building and running through into the structure, through draughts and weep holes and other devices which had been planned for the reverse purpose.

"Into our framework we have to contain the glazing area and some form of opaque or solid in-fill. At the moment the major material in use is mastic. It is used rather optimistically in the hope that it will first, remain pliable and, second, that the movement of the glass or in-filling panels will be small enough to be retained within the area of the mastic. Bill Allen has a sample of mastic which will show something of the problem here. This piece of mastic presumably once purported to be non-setting. How old is it?"

ALLEN: Roughly ten years old, used in a protected position.

MILLS: It is now as hard as any cement could be.

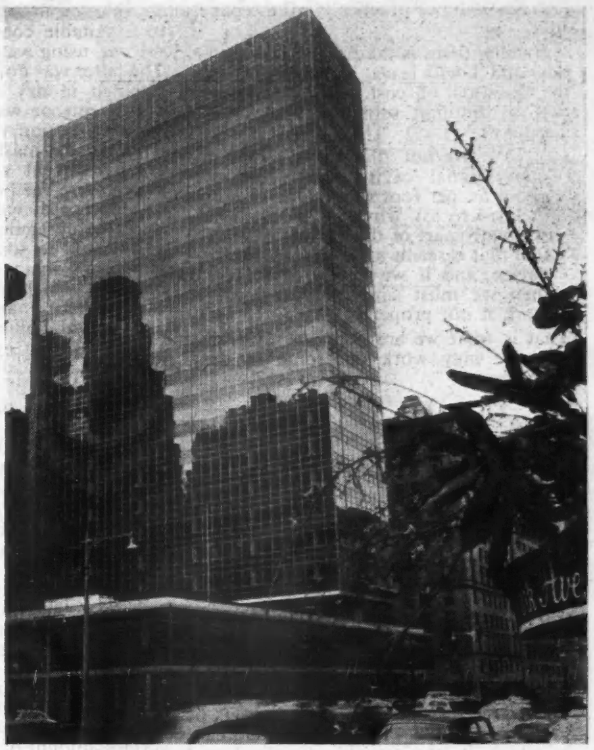
ALLEN: It makes very good pottery.

MILLS: When I was shown the drawings and specifications for the UN building remedial work, following damp penetration, I was startled to see that the specification called for caulking of various joints and parts of the frame structure. On inquiring what was caulking I was told it was non-setting mastic and there were one or two huge drums of black, sticky stuff which are fairly resilient to begin with but which, within ten years, will, I imagine, turn out rather like this sample we have here.

MASTIC DIFFICULTIES

Mastic as it stands will not do for a caulking or weatherproofing agent. One of the interesting developments in the US (instigated by Saarinen) has been the use of rubber extrusions forming the joint between in-fill panels and the structural members of the curtain wall, rather similar to the extrusions used on a motor-car. There again, they have been in use for some months and so far they look very successful and promising, but I wonder how long they will stay in a reasonably pliable state and how long they will continue to act as a cushion and still keep out moisture which tries to get in through the joints which they conceal. Will they fail almost as quickly as mastic? We have to consider an entirely different system of weatherproofing, perhaps something more in line with the patent cladding method which (oddly enough) is not known in the US or, if it is known, has only recently been introduced—something which does not rely on mastic or rubber extrusion.

ALLEN: The question is whether such things, which have to face up to the terrible technical odds against them—odds of workmanship as well as of technology and science—should, in fact, be asked to perform as a first line of defence. Such materials probably make a good second line of defence, but the odds against are considerable to begin with. On the point of the amount of run-off from a structure, if you stand at the foot of an ordinary stone building in a heavy rainstorm you are not conscious of any great run-off from the building. There may be a little. But one has to recognise that a building which does not hold or absorb any water is radically different. I did a computation of the run-off in a heavy shower and it comes out at something like one gallon per foot run per storey per minute. With a building of 20 or 25 storeys projected and going forward in London in a year or two's time, wrapped up in cladding like the Lever building or the UN building, the run-off would be perhaps 2,000, 3,000 or 4,000 gallons a minute. That is a lot of water and it is accumulating all the way down so there is an enormous amount to spare, to find its way into any cracks. One has a different technique of water-removal to handle.



LEVER HOUSE, NEW YORK, a view showing the reflection of part of the Park-avenue skyline on the glass curtain wall.

MILLS: If we are to have high buildings with permanent colour we must have a means of cleaning the building and keeping it in its original state, as envisaged with the UN building. There a man is suspended on a couple of hooks on the mullions of the windows. He gets danger money and thoroughly deserves it. On the Lever building there is a complicated but extremely efficient gantry system which travels up and down certain of the mullions so that the whole face of the building can be thoroughly cleaned. The question of maintenance and cleaning is of great importance, particularly with a building such as we may soon have, 23 or 24 storeys high. The idea of hanging out of a window on straps or on buttons will not do. On the other hand, travelling devices like gantries cost money. Whether such a device can be made to pay off over a period of years is a question needing a lot of consideration.

FIRE PROBLEMS

There are old and regular problems which arise with any form of walling. Fire protection is a real problem. If we are not careful we may find fire protection requirements in relation to curtain walls might invalidate the whole curtain wall technique. If we have to provide a fire protection backing up to a height of three feet, as the by-laws at the moment require, that may put the whole economics of curtain walling sadly on the wrong side of the balance-sheet.

On the other hand, one can visualise alternative systems of projecting ribs which will meet by-law requirements and form a fire stop between floors which will have the considerable advantage over the backing method in that it not only provides your fire break but gives you access and, at the same time, deals with this problem of run-off and water collection to which Allen has just referred. Admittedly, that knocks on the head the continuous curtain wall, and brings us to consider storey-high panels, for which I believe there is a very great future, at any rate in large-scale lightweight planning. A solution to the problem in multi-storey buildings perhaps lies more in the field of storey-high panels as the Americans use them, the panels being made in relatively large units and fixed at high speed.

There are other problems. If we are to make heating economical, then we must ensure good insulation. If we are thinking in terms of thin skins then, again, our insulation must be incorporated into the thin skin, and again problems arise. We shall be interested to hear your views as to whether insulation is to be incorporated in the unit, if we get thin membranes, or whether it is better to keep that separate and to get the weather surface and air space outside.

Then there is the problem of condensation, largely overlooked both here and in America. That arises from damp coming into the inner liner which then condenses on the glazed face which is used for the in-fill panel. It is a serious problem which must be catered for. With very large glass areas there is also the problem of sun-glare, and while the Americans have used anti-sun glass that has brought problems in its train. In the Lever Building insufficient tolerance was allowed for the glass. As a result, in the

first hot summer practically all the panels split.

Finally, there is the problem of aesthetics, and I will leave, as a parting shot, the question of cost. I will deal with that by quoting something we said at Torquay:

> "We are not allowed to forget that conventional cavity walls cost only about 5s. per foot super. One is almost inclined to ask why it is worth trying. A goodly part of the answer lies in the fact that it seems a logical architectural device, and if we believe it to be so, then we must simply settle down to work it out properly."

That is what we are here for, to discuss how we may work out some of these problems.

THERMAL MOVEMENT

ALLEN: Mills spoke of thermal movement, but did not go very far into it. We have to remember that holding the glass itself is a problem. Glass is all right when it is clear glass, but the moment it is itself coloured or has colour painted on it, and behind it, it will get much hotter and its movements will greatly increase, making fixing problems still more severe. It also means one must provide some means of fixing which the glass, in its movement, will not bump into. We have had, and will get again this Spring, a crop of problems of this kind. They are seasonal with the onset of summer weather. I remember one case in which it was possible to stand and listen to these panels going off like rifle shots, one panel in four breaking, in characteristic patterns. It was found that, although the tolerances had been nicely worked out, the panels were running into fixing screws which had gone in at an angle. Some people have had trouble with wired glass because, if it is not cut properly, wired glass flaws slightly at the edge where the wires are, making a weakness which, when subjected to thermal stress, stimulates cracking. One certainly gets an enormous amount of cracking with wired glass which one does not get with panels of other glass. Such things make the problem of fixing glass with a watertight mechanism still harder. It surely means that one does not use panels which are too large, because that increases the amount of thermal movement to be dealt with.

Milis has not mentioned modular co-ordination. Perhaps we should leave that on one side because it is a technical problem, not a dimensional one. The possibilities of aluminium also interest me, and the relative economics of aluminium plus maintenance and steel plus its paint. That is a matter which must soon be considered.

MILLS: May I underline the question of timber in curtain wall construction. I must repeat Mr. Sam Morris's story of the two students who were talking of new materials and particularly of one which can be planed, sawed, drilled just like plastic. It is called wood. In spite of that I have to admit that the most successful panel I have heard of was of timber. I believe it has a lot of uses.

MR. KEMPSTON (Berry Wiggins, Ltd.), opening the discussion, said that the problem of getting mastics into position was not always easy. The type with which his firm was concerned was based on bitumen and that could only be made capable of being handled, and brought to a suitable consistency, by the use of solvent, using water, or pouring it in hot. The latter was not a suitable way of using bitumen in dry construction. The use of solvents or water posed the problem of later getting rid of both agents. In doing so the mastic decreased in volume as the solvent and water disappeared. There were methods of making bitumen soft by use of volatile solvents, but then we came up against the problem of flow. That could to some extent be prevented. His firm's main aim was to produce a bitumen which could be handled and easily placed and which would not decrease in volume as it dried out and also would not eventually become hard. It should be possible to produce a mastic that would "fill the bill." Its difficult colour did not meet with approval and it was a difficult material for adding a coloured finish. Ordinary oil paint could not be used because it discoloured.

MR. MACK (Building Research Station): What would happen with mastic at the top of a tall building would be different from what happened to it at the bottom, where one might have a mild exposure and would not expect much trouble with a 9-in. wall as long as the building was quite small. But by the time one got to the top there might be very considerable wind speed, so that the bottom of the building might have a mild London climate and the top might be similar to a severe seaside exposure. Up here is a certain amount of wind-blown rain which had not accumulated as it would further down. At the top, if the wind blew in one direction we had perhaps a large pressure build-up. At the foot, with smaller wind, there was much smaller pressure. The higher wind pressure could have various effects: supporting panels might flex, the whole building might be twisted or distorted, and any raking of the building or support faces would be important. If we got a crack, even an upward one too wide for capillary effects, then, with high wind pressure, water could be driven up there.

RELIANCE ON MASTICS

We had to rely on mastics to prevent cracks. If we were thinking of lives of 60 or 100 years we had not yet got mastics for the job. Suppose one had two surfaces to join by putting mastic in. There was some movement with a certain width of mastic. Suppose that it moved 25 per cent.; that might or might not be all right, depending on adhesion and the forces acting in the mastic when the two surfaces moved apart. One may have to go to something considerably wider than mastic to take up that movement and, as mastic might stiffen with age, a considerable margin of safety might be needed. The possibilities were exciting to architects and perhaps interesting to builders, who would not have to lift quite so much weight so high; they also interested technicians because of problems not yet solved in this field.

One other problem: we were putting stove finishes or some types of colour finish behind glass. Moisture might or might not get in, temperatures might or might not be too high but we were hoping for a 60 years' life. That, too, was very interesting to technicians.

MILLS: I have seen some heavy maintenance bills where there has been coloured paint behind glass. In one case the paint has begun to break the panels before the building was finished.

MR. J. M. HOLT (Pilkington Brothers): We have carried out experiments and hope that in the not too distant future we shall have found a glass on which colour is permanent. Glass manufacturers are able to provide the various glasses which Mr. Mills has mentioned—transparent, translucent and fire-resistant, and glass to withstand shock. But every type must be considered on the merits of application. We have heard tonight of some failures but those are few in relation to the number of successful jobs. I believe we could pinpoint the reason for those failures. The fixing of glass to buildings is now covered by a Code of Practice, No. 973; this is in course of amendment and I believe adequately covers many of the difficulties Mr. Mills mentions. I cannot say too much on new glazing materials, but there will soon be an answer to this question of colour on the back of translucent glass.

Water penetration was mentioned. I am glad it was stressed that we are not behind the Americans. One has only to look at glazing technique in this country. There are difficulties of water penetration with a glass roof as there are with good type metal windows. I believe the British Standards people in the BRS are also considering this question of mastics. In using glass as with anti-sun glass which absorbs heat, special precautions must be taken in fixing. Before using any new technique or new type of glass one should consult the glass manufacturers' technical service.

MR. M. DUMVILLE (Elliott, Cox and Partners): There is a difficulty in the insertion of panels of the type which are not curtain walls but are really a panel fixed between floor and ceiling or the floor above and the framework. The trouble with the building trade is that it does not measure by the thousandth. Its tolerance is usually the nearest half-brick. If your panels fit the architect's drawings you will find when you go to put them on the job that they will not go in or will not stay in, or will let in water. The only answer seems to be to make each panel on the job to fit the whole thing to the orifice. That defeats the object of prefabrication.

MR. L. A. ASHTON (Joint Fire Research Organisation): It is unfortunate that curtain walling has also to contend with the added element of fire. The by-law requirements are clearly stated. As Mr. Mills said, you can achieve the protection required by horizontal projections or a dwarf wall. I do not see any reason why the requirement could not be achieved in the curtain walling itself. In finding the fire-resistance of a particular system the joints, the method of linking, must be examined as well as the materials.

MR. WARD (SMD Engineers): Looking at advantages and disadvantages, there is scope for the use of aluminium in curtain walls. To the basic cost of 5s. per sq. ft. normally must be added the finish for plastering and all the structural foundation which supports the wall. In the average building perhaps one-third of the load carried is upon the walls. If you can save one-third on steel-work casing and foundations that is appreciable, plus an added saving in the scaffolding. The problems of weatherproofing buildings

ELECTRIC LIGHTING

THE LIGHTING OF DOMESTIC INTERIORS

The proper lighting of domestic interiors is still hampered, in many cases, by the convention which would confine lighting outlets to the ceiling, where they are often found solitary and awkward, and placed regardless of the usage of the room or its appearance when furnished, lighted and lived-in. It remains a mystery, for example, how the tradition arose of placing a ceiling pendant in front of the bedroom window, and why the practice is allowed to continue.

Lighting Fittings and Luminous Features

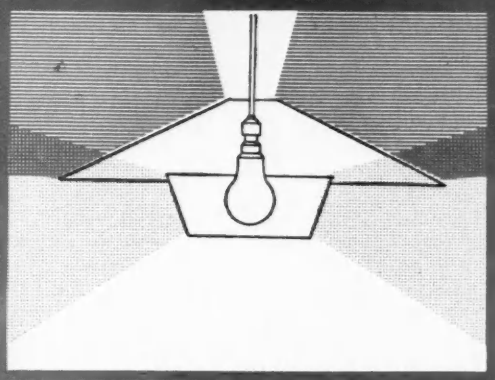
Two important rules may be suggested. The first, grimly obvious but far too often neglected, is that light fittings should be designed and placed so as to provide enough good quality light at the right places and from the right directions. There are no conventional or standardised positions which will suit these requirements in every room. Secondly, care must be taken to distinguish between lighting fittings and what may be called luminous features, in order to obtain the most satisfactory results.

The function of a light fitting (see L.1 and L.2) is to release the maximum amount of light for comfort in the manner described in the first rule just quoted. A luminous feature, on the other hand, is not provided to give a high proportion of useful working light, but to produce an interesting effect by virtue of its appearance when illuminated, and the manner in which the light it emits gives point and life to selected areas or objects in an already adequately lighted interior. There is no firm dividing line between a light fitting and a luminous feature: many contemporary light fittings hover between the two; but as long as this is understood, and a high functional performance is not expected from the "luminous feature" type of fitting, all will be well.

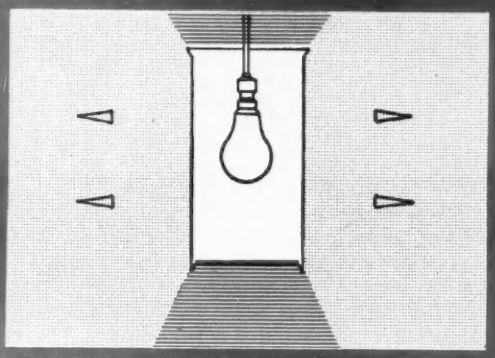
Lighting efficiency, in the sense understood by the illuminating engineer designing a commercial installation, has really no place in the home. Electric lighting is extremely cheap and can be manipulated in an endless variety of ways: the true measure of its efficiency here is rather the extent to which the light is provided where and how it is wanted, which is rarely a matter of the photometric efficiency of the fitting. It is the personal satisfaction of the user that is of primary importance, provided always that the illumination of any particular task, such as reading, writing or sewing, does not fall below the levels recommended in L.1.

Overhead Light Fittings

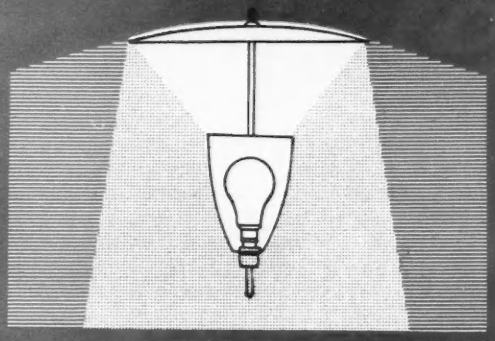
Though generally satisfactory where the functional aspect is dominant as in kitchens, bathrooms, on staircases, over dining tables and sometimes in tall rooms, overhead lighting has little to recommend it in living rooms and bedrooms where the resultant illumination lacks interest, is most unflattering to the occupants of the room, and is quite unsuitable for reading in comfort. In practice, stand and table lamps are invariably added in living rooms, and table and bedside lamps in bedrooms. Ceiling lights may be dispensed with in both cases by arranging for at least one standard or table lamp to be switched from the door, unless special requirements have to be satisfied. A counterbalanced fitting is probably the most satisfactory type for use over a dining table as it can be lowered to the right height when required. Being used at low level, the shade must be sufficiently diffusing to light gently the faces of people sitting at the table (Fig. 1a): unpleasant facial shadows should be avoided. While there must be no risk of glare directly from the lamp or reflected from a polished table top, the lamp should not be totally screened, or the gentle glitter from silver and glass will be lost. For tall rooms, passages, staircases and halls, tall diffusing shades, from which the major distribution of light is horizontal, are most successful (Fig. 1b). Many variants of this type of fitting are possible which obviate the "well" effect often produced when most of the light is directed upwards and downwards. Spherical opal glass diffusing fittings frequently cause glare and should be used with caution (see L.1 and L.2). It is important that only fittings of the very lightest weight should be supported by their flexible cords: all others should have adequate chain or tube suspension.



a. *A suspended light fitting: the diffusing shade is lined with white material and the lamp screened in a similar way.*

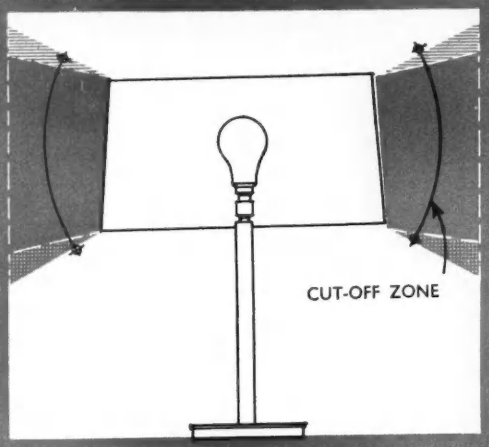


b. *A suspended fitting for tall rooms or passages: the shade is translucent with upper and lower screens of more opaque material.*

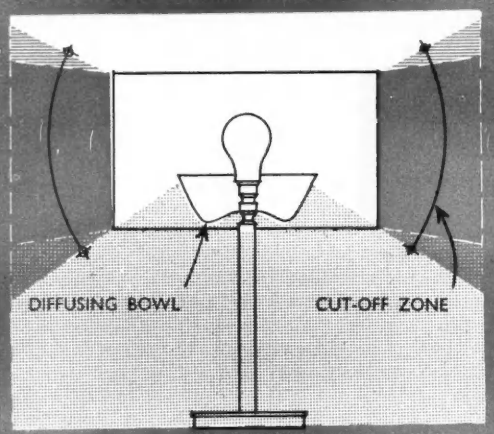


c. *An indirect fitting, with the lamp set in an enveloping metal shade beneath a concave reflector.*

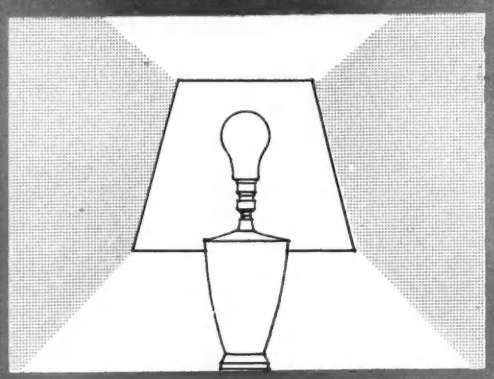
Fig. 1 Performance of lighting fittings



a. *General lighting by means of a table lamp with large diameter opaque shade lined with white material.*



b. *A table lamp with large opaque white-lined shade for general lighting and a diffusing bowl for reading and writing.*



c. *The familiar conical type of diffusing shade with wide distribution of light for general illumination.*

Fig. 2 Performance of table lamps

Wall Fittings

Lighting from the walls of a room produces a more pleasant effect than ceiling lighting in most cases, but its use is limited. As the fittings are prominently in view, the light intensity must be kept low to avoid discomfort, with the result that horizontal illumination falls off rapidly only a few feet from the wall. There is also a tendency for some rooms to look smaller when lighted mainly in this way. Wall lighting is more successful in large rooms or where a directional fitting is hung on a wall, for example above a desk or sideboard; otherwise wall fittings are best considered in the luminous feature class.

Portable Lamps

Portable lamps are especially suitable for living-room and bedroom lighting: they control and direct the light from the lamp in various ways, and should be chosen for their lighting characteristics as well as appearance and cost. If the former turn out to be inadequate in use, it is no solution to use a more powerful lamp than the fitting is designed to take: the result will be doubly unsatisfactory.

Standard or table lamps which emit a generous proportion of upward light are quite satisfactory for general room lighting, either to supplement or replace ceiling fittings (Fig. 2a, b, c). This method has much to recommend it if an ample number of socket outlets has been installed (see D.I.1 and 2), owing to the flexibility possible and the attractive lighting effects so easily achieved. The most important requirements for lamps used in this way are:

(i) Floor standard: minimum height from floor to top of shade, 5 ft. 6 in. Table lamp: a good average height from table to bottom of shade is 1 ft. 2 in.

(ii) The shade must be capable of accommodating and adequately screening a 150 watt lamp on a floor standard, and at least a 100 watt lamp on a table fitting.

(iii) Approximately half the light emitted from the lamp must escape upwards.

(iv) The shade should be of the largest reasonable diameter in order to let most of the light out.

(v) The shade should have a white or light coloured interior or lining to give freedom of choice for treatment of the outside.

If a diffusing bowl or skirt (Fig. 2b) is not provided, a silica-coated lamp may be used to obtain the required lighting characteristics from an otherwise suitable floor standard or table lamp.

Opaque Shades

Opaque or nearly opaque shades can be used most successfully for table lamps, and may often be preferred to translucent shades, especially when near to the face as on a writing desk. They can also be used for general lighting if their diameter is considerably greater than their height (Fig. 2a and b), and the cut-off angle thus formed keeps the lamps screened from people sitting or standing. Rich and interesting colour effects can be obtained with this type of table lamp in decorative schemes of any period or character.

Some light fittings with narrow enveloping metal shades come into the luminous feature category owing to the high proportion of light they trap, even when pierced with the traditional tiny stars or holes. Although often most attractive, they cannot be recommended for reading or writing, as the small patch of bright light projected onto book or paper will produce glare unless the brightness of the immediate surroundings has been brought up to a comparable level (see L.1) by light from other fittings. When reversed and used in conjunction with a reflector, as in Fig. 1c, a soft pleasant light is obtained, but of low intensity unless several such units are combined in a cluster. Then the quantity of light obtained may be adequate, but the efficiency remains poor, as in other forms of indirect lighting, of which this is a special case (see L.2).

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L.3 British Electrical Development Association

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can best be solved by the specialist. Why should glass always be specified in curtain walling? The percentage of glass in a normal wall may be 25 per cent. In designing a wall it should be good enough to leave aluminium or other materials to form the rest of the wall surface. Although mastic and rubber have been mentioned, I believe mechanical joints like glazing bars can also assist weather tightness. The life of rubber need not be limited to, say, five years. It is exposure to ultra-violet rays in ordinary light which affect rubber. If it is not exposed to that light its life may be much longer.

WEIGHT SAVINGS

MR. BARR (London County Council): I agree that the panel approach is a very good one and probably offers fewer problems. Tolerances are a matter for the specification. In designing prefabricated panels, choose a suitable contractor and specify tolerances so that you get half an inch where you want it, not half a brick. There has been much greater accuracy in London contractors in the past year or two, and much greater accuracy in concrete work. One can get plus or minus three-eighths of an inch, which is good enough for many panels.

In regard to weight saving, mentioned by Mr. Ward, Mr. Mills gave a figure of 5s. per foot. If you add the saving on foundations, with big buildings where foundations go deep, and also saving on thickness of the wall which you get back in the economics of floor area, plus plaster and finishes and so on, I still believe your target limit will be somewhere about 7s. 6d. per foot if you want to be competitive. There are very few cladding materials in which you can get down to that figure. I do not put so much faith in the specialist. You can learn all about his particular product but no one man or one product has the complete answer to a problem. The architect has to sort out the problem of putting all these different things together and coping with the complex resultant troubles.

I have found that painting glass or putting insulation on the back of it in cladding panels is a sure way to make it crack. It is most essential to leave a cavity for ventilation behind it. In fixing glass (particularly where you have got good insulation) you need considerably greater tolerance round the edge than is normal with ordinary glazing. I am optimistic that there are mastics which will stand up to the job, and I am sorry Mr. Mack and others did not mention some. I too feel that timber is a wonderful cladding material. Perhaps some fire regulations are a little rigid in demanding incombustibility in facings in so many buildings. There has recently been a five-storey block of flats in Norway deliberately faced with timber cladding panels from top to bottom. In this country there is just one local authority (a long way from London) which has recently done the same thing on a limited scale.

THE CHAIRMAN: There is a completely non-tangible saving in using dry cladding methods, from the builder's point of view —speed of erection. I believe there are a very large number of buildings which are revenue-earning assets and which must be completed in the shortest possible time. Whether you prefer cavity walls with dry construction or not, there must be that saving in getting the building completed earlier. That must be taken into account in considering the economics.

MR. DE SYLLAS (Architects Co-partnership): From the architectural viewpoint I find it difficult to justify the use of glass which is self-coloured or has colour added to its surface, as you are then getting a material which is a colour with glass on it. It should be possible to reproduce that in other ways. The value of glass is that one is using a transparent or translucent material which can best be exploited as an external scheme with colour behind it but not touching it. If one is to colour glass then there are now equally good panel materials which are not as costly as glass.

MR. HOWARD V. LOBB: Glass is widely used because it keeps clean. In the climate of our cities that is an obvious advantage. I have been looking into these materials and have experimented with vitreous enamelled panels, eg, molten glass fired on to steel. That has been used in America and we have the technique and manufacturing capacity to do it in this country. It may be the answer. In view of Mr. Allen's comments I would like him to comment upon this: When you look through a window, that window for 90 per cent. of the time reads dark and lines are used in the spandrel panels depending on whether one wants vertical or horizontal emphasis, or the panels standing out; but what are Mr. Allen's reactions to the use of colour in those spandrel panels in regard to vitreous enamels?

ALLEN: One wants to sit in front of a building like the Lever building and think how it would be were it different in that respect. I have a vivid recollection of the building looking like an enormous aquarium encased in green glass, and looking as though it needed some cleaning inside. My feeling is that the blues and greens and cool colours will not count. It will be the light warm greys, yellows and reds which will mean something. There will be exceptions.

AN ENGINEERING PROBLEM

MR. OVE ARUP: We have heard that this problem of curtain walling cannot be solved unless the architects get on to the job. It is really an engineering problem. In thinking of curtain walls there has been this distinction between a curtain wall and a panel wall. In both cases the curtain wall is supported, vertically or horizontally, by the building behind it. One would not have a 22-storey free-standing wall. It is a question of designing something in front of the building supported by some points which will not move away from each other, or forward or backward, as the main building moves. It is a question of designing a screen with movable foundations. That is perfectly possible. If you divide it up into small panels and concentrate on getting the detail you can deal with that without mastics. The ordinary roof tile, overlapping, is a perfect example of making an area waterproof without mastics, other than a hanging tile wall. The difficulty is that the more you make it foolproof, making this curtain wall support all these things which can move and slide, the more it is likely to cost. There is always this question of cost. The question of cost is again a question of design details. Design details are a question of manufacture, not only for the function of the thing but how it is done to get the cost down, using details and methods which come naturally to the material. It is simply a matter of design and ingenuity in solving the details.

MR. BRUCE MARTIN (British Standards Institution): The whole problem is conditioned by two fundamentally different things which one can do with the wall. One can put it outside the floors or between the floors. Though this may sound elementary I cannot yet make up my mind which is the better method. I believe that is the big problem we have to face in knowing what is a curtain wall. The Americans have gone for framing in the sense of an overcoat. We have heard other arguments for going between the floors. We should not overlook the fact that apparently there are two major different ways of doing that.

DRY CONSTRUCTION CEILINGS

On this subject MR. MILLS said: The case for dry construction of ceilings is a great deal clearer to most architects, and is on grounds more firm than that for curtain walls. Most architects have had the problem of hard plaster skin or plaster board which goes off like a pistol shot as soon as the client moves in, then cracks run right across the ceiling. Despite the fact that the plastering has been carried out according to the specification of the manufacturers of the plaster board it cracks every time. That makes a fairly strong ground for the suspended dry construction ceiling for it gets over that difficulty. I will give you a list of problems which arise with suspended or dry construction ceilings. *Acoustics*: If we have suspended ceilings we might as well use them acoustically. Practically every building we saw in America was acoustically treated and the *in situ* plaster ceiling was almost unknown. Second, *fixing methods*. In this country many methods are far too clumsy and want more definition in detailing. *Fire resistance* rears its head, particularly in relation to new by-laws although if you can achieve it in the ceiling it gets you out of a lot of difficulty. Then there is the problem of *condensation*, particularly with ceilings in rooms where the humidity is high and where you have much higher heating in a building, because of thermal insulation, than before.

ACOUSTIC PROBLEMS

Some simple solutions to the problem of sound transmission have not proved as successful in practice as in theory. Perhaps the dry construction ceiling can help. Next, if the dry construction ceiling has any permanent value it must be capable of easy removal and replacement. It offers a ready-made duct into which services like electricity and all other facilities can be placed and conveniently housed. Unless a maintenance engineer can take down a portion of the ceiling and get on with the job and then replace that portion you will have a situation such as I have seen. There will be a mighty battle going on between the ceiling and the maintenance engineer. He gets the channel out, either twisted or broken, then cannot get it back. The job is bodged and left. That can happen with dry construction ceilings but it ought not to be allowed to happen.

A question has been raised in relation

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to curtain walls and movement. If a building moves then the ceiling will move and while it will not produce cracks if fairly freely linked it may produce an unsightly effect. A continuous flush surface is ideal for cleanliness whereas a ceiling with many joints can be a source of dust. There is there a question of detailing which can be overcome to make certain that situation does not arise. Finally there is the problem of cost. I was staggered at the figures of the difference in cost of plaster on a concrete ceiling which was to be constructed and the cost of suspending a dry construction ceiling below. If we are to make this worth while we must make sure there are other virtues which can be ascribed to the dry construction ceiling.

In America I had the impression that there was hardly a plaster ceiling to be found in any building, except domestic buildings. It is really astonishing. It is a mystery to me why we have not got sound absorption in extensive use. It is so valuable in office practice. The open office system, the means by which they get high space utilisation in offices, is entirely dependent on good absorption, which will give the necessary fire resistance. They have very handsome ones and they are not too expensive. With that type of ceiling there must go all the other things which make it worth while spending money, especially the solution of lighting problems which enables equally flexible use of the space beneath, and sprinkler problems. They also must be neatly solved; and there is the question of air conditioning.

MAKING ARCHITECTS HAPPY

On Mr. Arup's point about engineers and architects, architects will be the happiest people on earth if the engineers will get together and solve these problems—but they will not do so. Perhaps it is a bit too difficult because so many would have to get together. Architects have to focus on the whole solution of a single problem which may involve a number of specialists, and it is a question of getting the right ones together at the right moment. One wants the problems solved before one finds them on the drawing-board, not in the course of design, when delay is caused making design, for the architect, a tedious and expensive process.

The suspended ceiling goes with the next section of the job in two ways: if you are interested in dry construction partitions you are generally interested in demountability and height, which means ceilings without beams and probably means suspended construction ceilings. If you are going to have partitions and expect decent sound insulation, you need reasonable sound resistance in the ceiling so that the sound will not pass along the space and down into the next office. There is a practical limit between two partitioned-off spaces unless you are prepared to go above that ceiling with a barrier, which will add to the cost and diminish flexibility.

THE CHAIRMAN: In discussing suspended ceilings in the United States we must remember that a plaster ceiling there costs a lot of money. If one is paying plasterers 25s. an hour, as they do, then naturally they can have a factory-made job. We are not yet paying that money in this country. That is very relevant to a consideration of why they prefabricate as much as possible off the site.

MR. O. B. ODDIE (Ministry of Education): Mr. Mills made the point that suspended ceilings were very useful where one wants to put services above them and it was therefore desirable that the whole of suspended ceilings should be demountable. We have spent much time and sweat (and other people's money) trying to make them demountable but we have realised that it is not necessary to have the whole area completely demountable. In fact, it is of advantage if part of the ceiling can be more or less permanently fixed. One wants to be able to fix electric fittings to the ceiling and it is very much easier to do so if one can fit them direct to the ceiling rather than through a beam or something similar above.

We must not allow our view to be too much coloured by our experience with plaster. It is a quite unfair comparison to say if you only plaster a concrete soffit it will cost you a lot less. It is absolutely plain that it will; but the fair comparison is with plaster on something like expanded metal or reinforced expanded metal. Spanning between beams and some types of suspended ceiling and dry construction do not compare so very unfavourably with plaster, even though we do not pay plasterers 25s. an hour. If we are not to be too much influenced by plaster techniques it is worthwhile considering the erection sequence. One tends to think of the plasterer coming in at a late stage in the building operation. It may be—I emphasise the "may"—that when you have dry construction it will be more profitable to regard the ceiling as an intermediate process in the building sequence and go right through putting up ceilings before putting up partitions. The treatment of partitions is possibly where one runs into money in dry construction. If one puts ceilings in straight away and then brings the partitions up to it one may hit problems of sound transmission because the partition cannot go right up through the space above it.

COMPROMISE NEEDED

MR. RAYDEN (I.C.I., Ltd.): I was interested to hear that a whole list of varying properties was wanted in one particular material. Some nine or ten properties are sought. In practice the only way is to compromise. It is up to the designers, whether they are architects or engineers, to make up their minds which are the important properties upon which they must insist and which are the properties they can, to some extent, put aside. I would like to draw attention to a very interesting ceiling put up in a garage in West London which consisted of very light corrugated material, almost like corrugated paper, fitted between runners. This ceiling could be rolled up when necessary, when work had to be done behind it. As it was so light it could also be drawn down for washing. That type of ceiling has valuable properties but one has sound insulation and so on to deal with.

ALLEN: It is an interesting material but I am not sure whether or not it is available on the open market. In the US that material is marketed openly at a pretty low price. Is it to be put on the market here at a low price? That is a prime requirement, in order that engineers and architects, using it in different ways, may find the best way. It is an interesting and useful material which softens quickly in heat so that heat can get through to the sprinklers behind.

MR. RAYDEN: I was only quoting the method not dealing with the material. Possibly foil aluminium might be used.

MR. HARTLAND THOMAS: I am attracted to the suspended ceiling with its clear, plain surface and all the oddments out of the way behind it. That presupposes a very great floor depth. With a multi-storey building in the City with a height limit one might very rapidly sacrifice one or even two storeys because of these very deep ceilings. Can it be argued that the sacrifice is balanced by the advantages?

MILLS: It depends on the type of building and the quantity of services to be dealt with. Possibly with a multi-storey office building where one is mainly concerned with electric conduit and electric sprinklers and ventilation trunking that can be disposed of in some other way. Possibly there the dry construction ceiling has not the big pull it might have in an industrial building where one might have twelve or fifteen different types of services in a wide variety of sizes requiring housing and protection. It can be dealt with by other means which, in effect, might give a big saving on storey height, giving an extra floor or two, which makes a different economic basis.

DRY CONSTRUCTION PARTITIONS

MR. MILLS: The unit or dry assembled partition has perhaps fewer problems than any other construction we have discussed. We have had much longer experience of unit and dry construction partitions, they are not new. Before the War most large-scale office blocks were divided up by some form or other, often timber frame with hardboard infilling and partly glazed. That did the job of marking the barrier between one office and another. In a sense that has not done the dry partition any good because those forms of dry partition were very unsatisfactory in many ways. These included: Lack of flexibility. That is an essential factor in dry partitions. They must, in future, be tied down (or up) with some modular system of dimensional co-ordination so that they can be demounted and re-used in other positions without any wastage at all. Sound: These partitions have not yet become entirely satisfactory in regard to sound insulation, that is a very old and very real problem.

SOUND PROTECTION

The BRS will tell us that the right way to secure sound protection between one room and another is an 18-in. brick wall. We have to try to deal with the problem in 2½-in. or 3-in. An easily maintained surface is essential. Fire protection arises again, particularly in big areas. There is the problem of getting a reasonably neat, tidy unit either completely solid in appearance or part glazed and part solid. Then there is the biggest problem, the method of fixing with dry construction partitions. One must consider that, although light-weight items

(*Continued on page* 148)

LMBA

Minister of Works Attends the Annual Luncheon

THE Minister of Works, Mr. Nigel Birch, was the guest of honour of the London Master Builders' Association at a luncheon at the Park Lane Hotel before the annual general meeting of the Association, which took place on January 18. The president, Mr. R. S. Williams, presided. In his retiring presidential address, MR. WILLIAMS said:—

Looking back over the year, I think we may congratulate ourselves that we have made considerable progress in adjusting ourselves to the changed and changing conditions of our very complex industry, made even more complex by the advent of new materials, new processes and new techniques.

Cast your minds back to the methods of building construction a generation or so ago and compare them with those of to-day. No basic industry could have achieved such a vast change in such a comparatively short space of time unless it were possessed of men with enterprise, initiative, a spirit of adventure and a determination to overcome all obstacles and difficulties in the forward march of events, and I claim that this great industry of ours, far from being decadent as some people would have us believe, is in the van of industrial progress.

And what of to-day—and to-morrow? It is anticipated that an additional £100 million's worth of building and civil engineering work falls to be done during 1955, making a total of close on £2,000 millions for the year. That represents between six and seven per cent. of the country's gross national production. What a vast programme of work! What an opportunity!

Prosperity is there for all on one condition: that all of us in the industry and in the architectural profession plan for it and work for it; work hard and work honestly; we cannot afford inefficiency and dilatoriness at any level or in any sphere of production. And productivity starts with the inception of an idea in the mind of the building owner and carries on right through every phase of the project to the settlement of the final account.

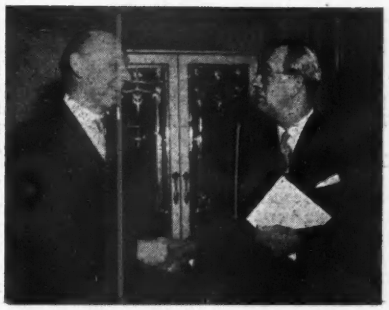
LMBA'S CONTRIBUTION

Responding to the toast of the Minister of Works, which was proposed at the luncheon by Mr. Williams, MR. NIGEL BIRCH congratulated the LMBA on the useful contribution they had made and were making to the progress of the industry, especially in connection with apprenticeship and the training of foremen, both of which were matters of immense importance. His Ministry had also been glad of their advice on the spreading of technical information and on building research.

The industry, he said, was judged by its achievements, and these had been considerable. The volume of building had increased by 15 per cent. since 1951 and by five per cent. during the past year.

Referring to the abolition of building licensing, the Minister said that this offered an opportunity and a challenge to the industry and he hoped that the result would be new buildings embodying variety and attractiveness, two qualities that had been lacking for so long.

The principal aim at the moment was to keep the volume of building at a high and steady level for the benefit of the country and the industry. The licensing system was a negative power, "a blunt instrument" which retarded development; the aim now was to raise the volume of work. The assistance which representatives of the LMBA could render to his Department would be more than ever appreciated now and in the immediate future.



The Minister of Works (Mr. Nigel Birch, PC, MP) and the President, R. S. Williams.

BUILDING MATERIALS SUPPLY

On the question of the supply of building materials, the Minister said that shortages of steel had caused some anxiety recently; the release of reinforcing rods from import duty, which took place on January 8, was an example of the efforts which his Department were making to improve this situation.

The chief danger now facing builders was that they might be priced out of the market by rising costs, the Minister stated. The remedy, he suggested, lay in efficient organization of work which he summed up in the word "teamwork." There were some builders, he added, "who might for five minutes a week think better of the architects than some of you do."

Among the guests at the luncheon were:—

Sir Charles Mole (Director General of Works, MoW), Sir Harold Emmerson (Permanent Secretary, MoW), Messrs. R. W. Porter (director, EFBTE), R. F. Mansell, A. G. Miles, F. Leslie Wallis (president, Institute of Builders), J. S. Galbraith (past president, LMBA), D. F. Cox (past president, LMBA), R. W. B. Howarth (chief information officer, MoW), Nigel Hannen (junior vice-president, NFBTE), M. W. Bennitt (Under Secretary, MoW), B. T. Henman (president, EFBTE), H. B. Kerr (past president, LMBA), W. K. Laing (junior vice-president, LMBA), L. J. Holloway (vice-president, LMBA).

Messrs. G. W. Grosvenor (president, NFBTE), K. C. F. Foster (junior vice-president, LMBA), E. A. Seal (deputy secretary, MoW), D. E. Woodbine Parish (hon. treasurer and past president, LMBA), Gerald A. Hill (immediate past president, LMBA), S. F. S. Hearder (director, NFBTE), A. J. Filer (Under Secretary, MoW), W. S. Jones (president, SCFBTE), Ian M. Leslie (Editor, *The Builder*), E. C. Holloway, P. Smallwood (past president, LMBA), S. House (London regional officer, MoW), N. S. Farrow, D. C. C. Roberts, S. R. Gerdes (secretary, SCFBTE), and Lt.-Col. I. L. Roney-Dougal (secretary, Institute of Builders).

The New President

After the report for 1954 had been adopted, Mr. L. J. Holloway was elected president for 1955, and Mr. K. C. F. Foster, Mr. W. K. Laing and Mr. Stanley Farrow were elected vice-presidents. Mr. D. E. Woodbine Parish was re-elected hon. treasurer.

The Council

Council and hon. auditor were elected as follows:—

Council: D. C. C. Roberts, P. H. Bates, P. Fotheringham Parker, P. E. Trench, G. Harris, L. F. Chamberlain, E. Smith, E. J. Cook and J. L. M. Miller.

Hon. Auditor: Lt.-Col. W. W. Dove.

CENTRAL AREA NO. 1

Election of Officers

THE general meeting of the Central Area No. 1 of the London Master Builders' Association was held on January 12, with Mr. Peter Trench, OBE, in the chair. The following officers were elected for the ensuing year:—

Chairman: L. J. Bradshaw (Dearsley & Carter, Ltd.); *senior vice-chairman:* H. Cowan (F. G. Minter, Ltd.); *junior vice-chairman:* F. A. L. Collis (Collis & Co., Ltd.); *hon. treasurer:* W. B. Barrett (Rawlings Bros., Ltd.); *hon. auditor:* B. J. Davies (Harding & Vick, Ltd.); *representatives on LMBA Council:* L. J. Bradshaw (*ex-officio*) and H. Cowan.

Building in Africa

FOLLOWING the general meeting, MR. IAN M. LESLIE, OBE, JP, showed some colour slides taken during a recent tour of Africa and spoke on the subject of African building, of which he gave a short summary. Speaking on the Native problem, the difficulty, he said, was to break the vicious circle of instability, poor housing, malnutrition, poor health, low producing ability and low wages which encompassed the African and made him unable to help himself.

The best point at which to break this circle, said Mr. Leslie, was housing, and the Union's Native Housing Workers' Act, which permitted Africans for the first time to engage in building as craftsmen, so long as they worked only on African housing, was the initial crack in the ice which could lead to the advance of Africans in the technical field. Many European building firms in the Union would be glad to employ skilled Africans in the building crafts.

"The most important need in Africa to-day," said the speaker, "is the establishment of a framework within which European, African, Coloured and Asiatic can work together for a united Africa. They are nearer to this in Rhodesia than anywhere else in the Union or British Central and East Africa. The danger lies in going too fast on too narrow a front, i.e., that the intellectuals will run too far ahead of the African masses. The aim should be rather to enable the ordinary Bantu to improve his production and so to build up his own self-respect, by enabling him to do more for himself. Here the building crafts have a vital part to play, and in British Africa considerable responsibility lies on the administration to see that more housing and welfare building is planned and that European supervisors of the right kind are available to teach the African how to build for himself and his fellows.

Following discussion, the speaker was thanked, on the proposition of the chairman, MR. L. J. BRADSHAW.

IDEAL HOME EXHIBITION

VISITORS entering the 1955 Daily Mail Ideal Home Exhibition, which opens at Olympia on March 1 next, will pass into a metropolis of Regency times. Chief among the details which will help to capture the proper atmosphere will be "mock-ups" of four rooms from the homes of four celebrated individuals whose lives spanned that of the Regent and whose names are as familiar to us to-day as they were when they enriched the years in which they lived.

They are the first Duke of Wellington, the conqueror of Napoleon and Prime Minister of England; Mrs. Fitzherbert, the morganatic wife of the Regent; Beau Brummell, the Regent's friend, at times; and Richard Brinsley Sheridan, the politician, playwright and wit.

LONDON MASTER BUILDERS ASSOCIATION'S 83rd ANNUAL REPORT

Progress Made with Many Current Problems

THE effect on the industry of the abolition of building licensing is referred to in the recently published annual report for 1954 of the London Master Builders Association. Accounts are also given on the progress made in connection with many outstanding problems. We take the following extracts from the report:—

General review.—The outlook for the industry is more favourable than it has been for some considerable time, and it is estimated that investment in building and civil engineering work in this country may be expected to rise by about £100 million, or approximately five per cent., in 1955. The end of building controls by licensing has come as a welcome release. There is now, therefore, no reason why pre-tender planning should not be fully developed and completed before tenders are invited so that builders may be in a position to organise their work from the beginning after full discussion in advance with the architect, the building owner and the sub-contractors. This procedure when universally adopted will be a considerable factor in the reduction of building costs, which is still the most urgent problem before the industry if it is to maintain full employment and prosperity. Thus the ending of licensing may be regarded as presenting the industry with both an opportunity and a challenge.

In common with other industries, the Association is giving active support to the British Productivity Council, but it is evident that there is a feeling amongst some builders that the work of that council concerns the manufacturer and the mass producer rather than the builder. This, in the opinion of the Association, is a profound mistake. The builders have a great deal to contribute from their experience in job organisation to the discussion of general industrial productivity and will add materially to the prestige in which the industry is held if they take an active part in the work of district productivity committees, not only for what they can get out of it, substantial though that may be, but more for what they can put in.

Productivity depends also on a better educated and better trained industry, both technically and generally. Here, as items in the report show, the Association is playing its part. The active steps taken throughout the year in regard to the recruiting of apprentices have borne fruit, whilst the establishment of new graduate courses of foremanship study will assist in providing the industry with a better equipped supervisory staff in the years to come. The managerial side has not been neglected, and contact has been maintained with the Public Schools Appointments Bureau and with educational authorities, whilst the closer contact now being established with the Institute of Builders should prove beneficial.

Unfortunately the new year starts in an atmosphere of further applications for increased wages and a continuing undercurrent of industrial unrest which, unless common sense prevails on both sides, may well menace the wellbeing of the industry. The application for an increase in building trade workers' wages of 4d. per hour, in addition to the increase which will come as a result of the cost of living index figures, is a very serious matter. Its effect would be felt in every kind of building activity, and this could well be critical at a time when the cost of building is already too high for a large number of prospective building owners. The industry is promised during 1955 a greatly expanded school building programme, while the tempo of the rebuilding of the City of London increases. A start is being made in the removal of temporary houses to make way for new permanent structures, nearly 160,000 in all, of which some 30,000 are in London. It would be regrettable if increased building costs disturbed this very attractive programme of work, as one of the first results of any curtailment of the programme would be that of unemployment amongst workers.

Apprenticeship. — The total intake of indentured apprentices this year is slightly higher than the figure for the previous year, but again, in spite of increased publicity for the trowel trades, the intake has not been balanced between the crafts.

It has been accepted that the target figures, which have been used for several years and which were based originally on Government estimates, are no longer realistic. There have been requests for the industry to fix its own target figures, and during the year attention has been given to this matter in the light of possible changes in the numbers of school-leavers, the average working life in the industry, and the correct adult craft force required by the industry. Although final statistics are not available, preliminary inquiries and returns have shown that a target figure of 2,000 apprentices each year for London is perhaps a better estimate of actual present-day requirements.

YOUTH EMPLOYMENT

Youth Employment Service.—In April many representatives from the Youth Employment Service, including county and principal youth employment officers, attended a conference with officers of the association and the joint apprenticeship committee.

Many problems and suggestions were discussed, but perhaps the item which received most attention was that relating to the general standard of education required, or desired, of boys wishing to take up apprenticeships in building crafts.

Certain education authorities have expressed the opinion that standards to-day are better than before the war (an issue on which doubts have been expressed) but the industry's representatives made it clear that, in their view, very few boys below grade "B" in secondary modern schools are likely to make a success of technical training in building crafts at City and Guilds standards.

The Association has maintained its close liaison with all the youth employment officers in the London region, and during the year has provided them with five lists showing the complete details of vacancies for a total of 572 boys. For the first time for many years there has been a substantial surplus of vacancies in the whole London region, and providing this position remains, youth employment officers will be encouraged to recruit more boys for the industry, which in turn means that employers will then have better opportunities for selection.

Experience has shown that there must be a considerable demand before the supply is forthcoming, and in spite of this year's surplus of vacancies, the fact remains that some boys seeking particular craft apprenticeships have not yet been accommodated.

Forms of Contract. — As in previous years, the Association has continued to urge on every possible occasion the use, without amendment, of the RIBA Standard Form of Contract, and to raise objections to any contract procedure which conflicted with the spirit and intention of the RIBA Standard Form.

Among instances of this nature must be mentioned the reviews by chief financial officers, instituted by some local authorities, which upon occasion have caused considerable delay in payments to builders. This matter has been taken up with the local authorities concerned and in one case representatives of the contracts committee have met representatives of the local authority to explain the Association's views; as a result, the town clerk has agreed to re-examine the clause inserted in the contract with a view to redrafting it in a form which would be less objectionable to the Association.

The contracts committee has taken note of the growing practice among quantity surveyors of including in bills of quantities conditions which are at variance with those contained in the Standard Form of Contract. The committee agreed that the growth of this practice was becoming serious and that every endeavour should be made to check it.

At the request of a member, the committee also gave consideration to the correct interpretation of the clauses (14(b) and 15(a) and (b)) in the Standard Form of Contract dealing with the question of the liability to insure the works and unfixed materials and goods upon a site against loss or damage by fire. In this connection a judgment given in the Court of Appeal confirmed that the intention behind the wording of the clauses concerned was that the employer should, as regards loss or damage by fire to the existing structures, their contents and the works and all unfixed materials and goods except plant, tools and equipment, bear the sole risk. Lord Justice Denning emphasised the point by saying that it was quite plain that the risk of fire was on the employer, even though caused by the negligence of the contractor's servants, and the employer was the person who must insure against it.

Articled pupilship. — The education sub-committee has devoted considerable time to the preparation of a scheme of articled pupilship for the London region, which scheme is now in its final draft form. Following the clarification of certain legal points by the Association's solicitor, who attended a recent meeting of the education sub-committee specifically for this purpose, it is hoped that the draft deed of pupilship will go before the council for approval at an early date. It will then be necessary to approach the Ministry of Labour for their sanction in relation to deferment from National Ser-

vice, which it is understood will be readily forthcoming.

Foremanship studies. — In conjunction with the standing committee and the London regional advisory council for higher technological education an experimental two-year certificate course in foremanship studies, administered by the principal of Brixton School of Building, has been established at the Westminster Technical College. The candidates were nominated by members at the invitation of the president and the course has been in progress since October, 1954. Those not eligible for the certificate course were individually interviewed by a special committee and directed to suitable alternative courses of study.

It is felt that the steps thus taken to improve the status of general foremen are of extreme importance to the industry and will directly benefit both employers and foremen.

Public utilities. — Charges made by various public utility undertakings for the installation of services have engaged the attention of the committee for some time. With regard to the electricity supply industry, most regional boards require the builder to meet only a proportion of the capital expenditure involved, provided the wiring installation complies with their standard requirements. In certain cases the committee have considered the requirements to be unreasonable and not in the interests of economic house building, and the matter has been taken up with the board concerned.

Members have also experienced delays and difficulties in obtaining temporary supplies of electricity in order to use hand-powered tools. Electricity authorities are now prepared to co-operate with builders in this matter, who are requested to advise the authorities as early as possible of their potential requirements.

The committee are also seeking to obtain a wider measure of uniformity in the charges made for certain installation work by the various gas boards.

Water supplies. — In addition to the efforts mentioned elsewhere in this report the housebuilders' committee has been pressing the Metropolitan Water Board to agree a realistic proportion of the cost of the average house which shall rank for the "non-water using allowance." Much detailed information to substantiate the committee's case has been obtained from members, and this appears to show that a fair proportion for the non-water using trades should be about 40 per cent. of the cost of the house. It is hoped that it may be possible in due course to persuade the Board (and other water undertakings) to accept this view.

Supplies of materials. — The materials supply position during the past year has been generally much more satisfactory than for many years past. Occasional local shortages in certain commodities have been notified, whilst the cement position caused some temporary anxiety during the summer months. Towards the end of the year, however, a shortage of steel, particularly in the lighter sections and in reinforcing rods, caused considerable anxiety. It seemed difficult to understand why, in view of the substantially increased output of the steel industry, there should be this shortage and discussions have been proceeding at national level with a view to the position being righted at the earliest possible date.

One particular commodity which caused great concern in the industry was the new brick with the larger U-frog which was suddenly introduced in the spring by the London Brick Company. It was indeed unfortunate that such a radical change was made without prior consultation with the interests most likely to be affected although the manufacturers made it clear that their intention was to provide a lighter brick which should assist in transport costs and would thus avoid an almost inevitable increase in the price of bricks. Intensive consultations went on over a period of several months and have resulted in the issue at the end of November of a BRS Digest No. 71 which should go some way to allay the fears which many had expressed. It is clear that if this brick is to be a success it must generally be laid "frog down" even though this is a departure from long-established practice. The whole industry is at the moment considering the implications raised and will be examining this Digest to see how far its comments will overcome the present difficulties.

TECHNICAL INFORMATION

Technical information service. — The Technical Information Bulletins, which are produced as a result of the problems submitted to the Association's technical information officer, Mr. E. G. Dean (Ministry of Works), are proving of increasing benefit to members. Appreciation of the service is shown by an increasing flow of inquiries, not only for advice on technical matters but for the wide variety of publications available, of which copies are obtainable through the area librarians.

Early in 1954 a meeting was arranged at which the area technical librarians were invited to contribute ideas for the improvement of facilities to members, as a result of which several suggestions were put into practice.

The technical information bulletins have been given much publicity and, following announcements in the technical Press, requests for copies have come from so many different sources outside the membership that it has become necessary for the technical information subcommittee to review the original intention that these bulletins shall be available to members only.

Accident prevention. — Reference was made to this important subject in the last annual report. The prevention of accidents continues to be the concern of the whole industry and it is of the greatest importance from every point of view that the matter should be studied seriously by every builder. The Association has continued its membership of the London Building Accident Safety Officers Group and has been regularly represented at the monthly meetings. The committee which was referred to in the last report has continued its investigations with the assistance of RoSPA, by way of a pilot survey and has now completed that part of its task. The monthly returns submitted are now being closely examined and it is hoped that the results will indicate a line of approach to be pursued further.

British Standards Institution.—Following the visit of technical officials of the British Standards Institution to a meeting of the council to explain the work and purpose of the Institution, discussions with representatives of the Institution have taken place at a number of area meetings during the past year. The Association has, at the request of the National Federation of Building Trades Employers, submitted the names of a number of members to represent the Federation on technical committees of BSI, and a recent review of the representation on such committees shows that at the present time more than 40 members of the Association are serving the industry in this way. Draft British Standard Specifications have, from time to time, been submitted to members with specialist knowledge for comment on behalf of the Association.

Liaison.—Close liaison has once again been maintained between the Association and other organisations concerned with the building industry.

Liaison with the RIBA has continued, as mentioned elsewhere in this report, and regular meetings have taken place (in company with representatives of the Southern Counties and Eastern Federations) with the county architects of Essex, Hertford, Kent and Surrey, and contact has been maintained with the organisations representing the borough engineers and surveyors in the London region, and also with the District Surveyors' Association.

The three-party liaison with representatives of the Associated Master Plumbers and Domestic Engineers and the London and Southern Counties Regional Association of the National Federation of Roofing Contractors has been maintained, and useful discussions have taken place on matters of common interest.

The education liaison committee, representing the Association, regional advisory council, educational institutions and authorities and technical colleges, has again this year provided valuable contact with the many educational activities undertaken by the Association and those arising directly from the education conference, 1953. The committee is now giving its attention particularly to the establishment of commercial courses of study for the clerical grades, and among other matters under discussion are industry-based sandwich courses and the relationship between the ordinary national certificate, the ordinary national diploma and the licentiate diploma of the Institute of Builders.

The foremanship training liaison committee, consisting of representatives of the LMBA and the Education Authorities and of the Foremen's Associations, has continued its work and, as mentioned elsewhere in the report, has been responsible for the setting up of the first two-year certificate course of Foremanship Study in the London Region.

Ministry of Works Regional Advisory Committee. — The Association's three representatives have attended regularly at meetings of the London building and civil engineering regional joint advisory committee. These meetings, which are attended also by civil engineering contractors, the professions and the trades unions, have been held as before under the chairmanship of Mr. M. W. Bennitt, and have continued to provide a valuable opportunity for presenting the industry's views and opinions to the Ministry of Works at regional level. The Association's representatives in the past year have been very definite in their advice on the question of release from licensing and the committee has discussed the general

question of supplies and materials. Technical information, together with the Ministry of Works' lectures, film shows and exhibitions have also been reviewed at each meeting. Now that licensing has been abolished the work of the committee will naturally change somewhat in emphasis, but it has been agreed that it would be useful for the committee to meet regularly in order to compare notes and to report upon prospects and upon any difficulties which may arise whilst the continued review of technical matters will be of benefit. Accordingly the committee will meet quarterly in the coming year.

British Productivity Council. — The members appointed by the Association to serve on district productivity committees throughout the region have taken an active part during the past year in the work of their various committees, and lectures, discussions and exchange visits were arranged and were attended by members of the Association.

The Association's representatives on the district productivity committees have met together and discussed at length ways and means of improving productivity in the building industry, and a report of their considered views has been received by the Council and forwarded to the National Federation of Building Trades Employers.

BOOKS

TRUE REMEMBRANCES: THE MEMOIRS OF AN ARCHITECT. By Philip Tilden. Pp. 175. Illustrated. (London: Country Life, Ltd.) Price 25s.

THE author of this book has been fortunate enough to know a large number of famous people, and to have had many of them among his clients. It therefore contains a great deal of interesting personal gossip, which will commend it to a wide circle; but from an architect's point of view it makes an appeal by reason of Mr. Tilden's remarkable career and his often spectacular commissions. Regarded as an autobiography, it is tantalisingly unorthodox and incomplete.

Mr. Tilden begins his story with his first "job" at Allington Castle in Kent in 1918, when he was 31 years of age. Nothing is said anywhere in his book about his training, but reference-books inform us that he attended the AA School of Architecture and was subsequently articled to T. E. Collcutt. It is only near the end of the book that he recalls his childhood in Birmingham (where his father was a distinguished professor of science) and the family's move to London in 1904.

The early stages of a successful career are generally interesting to a reader, and it is a pity that Mr. Tilden has not deemed them worthy of mention here. Where, for instance, did he learn to paint murals and carve stone corbels—a skill which he mentions frequently in these pages? Was it early concentration on the sketching and study of old buildings that gave him confidence for his numerous restorations from Allington Castle onwards? Certainly he shows a great love for traditional architecture, and above all for the English tradition. The last sentence of his book reads: "I am not afraid of the prospects of architectural development in England if it be on truly national lines"; and higher up the same page we find this: "Instead of engineers being the servants of architects, architects are becoming engineers; and sometimes engineers are becoming architects, which is worse." Incidentally, he states that he possesses the gift of water-divining (not yet taught in any architectural school).

From sentences here and there we gather that, somehow, he was "flung into the very vortex of world movement in politics and art," . . . "joined the top-hats, and was to live in the lap of luxury." So, beginning with the Conways, we meet, among Mr. Tilden's clients, Sir Philip Sassoon at Lympne, the incredible Gordon Selfridge and his far more incredible dream-castle on Hengistbury Head, Lloyd George at Churt, Lady Warwick at Easton Lodge, Winston Churchill at Chartwell (which involved "practically rebuilding"), and many other notables at this period. Famous houses restored or remodelled after the Second World War included Saltwood Castle, Knebworth, Luton Hoo, Sydenham in Devon, and Antony in Cornwall.

Mr. Tilden's anecdotes of his distinguished clients are readable enough, but his description of the Selfridge castle (never erected) reads like something out of a fairy-tale. It was to be, among other things, the largest house in England, completely medieval and military in aspect, with a lofty enclosing wall many miles long, a central dome nearly as large in diameter as St. Paul's, "at least" 250 complete suites for guests—each with a sitting-room, and dining-rooms to seat "several hundreds." Perhaps it is as well that it was never built, for his drawings—excellent in themselves—show a sad hotch-potch of styles. The most startling illustration in the book is a design for an enormous central tower over Selfridge's store in Oxford-street, apparently about 80 ft. sq. and 400 ft. high. There can be few architects alive, few even in history, who have a more remarkable experience, and few who have a warmer love for the English tradition.

M. S. B.

THE LANDLORD AND TENANT ACT, 1954, with annotations and general introduction by S. W. Magnus, BA, Barrister-at-Law. (London: Butterworth and Co. (Publishers), Ltd.) Price 22s. 6d.

THE Landlord and Tenant Act, 1954, is an extremely important statute containing the permanent provisions for leasehold reform pending which the Leasehold Property (Temporary Provisions) Act, 1951, was passed as a stop-gap measure. The main objects of this new Act, which came into force on October 1, 1954, are to give the protection of the Rent Acts to occupying ground lessees of dwelling-houses within the rateable limits of the Rent Acts and to give tenants of premises occupied for business, professional and certain other purposes a more effective protection than that provided by the Landlord and Tenant Act, 1927. It was also considered necessary to make certain other amendments in the law of landlord and tenant, the most important of which is the extension to every kind of property of the provisions of the Leasehold Property (Repairs) Act, 1938, which restricted a landlord's right to enforce repairing covenants in respect of small houses.

The first part of Mr. Magnus's book consists of a general introduction which deals fully with the background of the Act and the various steps leading up to its passing and concludes with a useful general summary of its provisions. The second part sets out the provisions of the Act itself with notes under each section. These notes in the main will assist the reader to understand the complicated provisions of the Act, but it is unfortunate that so much material has been included which would have been more appropriate in a book on the general law of landlord and tenant than in a commentary on a particular statute. For example, nearly four closely printed pages and more that two such pages are respectively devoted to a general discussion of the law relating to "notice to quit" and "surrender"; the note under section 23 dealing with "body of persons whether corporate or incorporate" contains the interesting but wholly irrelevant information that a body corporate "cannot be guilty of such criminal offences as treason, felony, perjury or offences against the person." The last part of the book includes welcome extracts from previous legislation affected by the Act and various rules and regulations made for the purposes of the Act.

This is essentially a book for practitioners and it should prove a useful guide to an extremely complicated and difficult statute.

G. A. A.

HILL AND REDMAN'S COMPLETE LAW OF LANDLORD AND TENANT. Third Cumulative Supplement to 11th Edition by W. J. Williams, BA, and Miss M. M. Wells, MA, Barristers-at-Law. (London: Butterworth and Co. (Publishers), Ltd.) Price, supplement alone, 42s.; combined price 95s.

THIS additional supplement has been rendered necessary by the passing of the Housing Repairs and Rents Act, 1954, and the Landlord and Tenant Act, 1954. The whole of the latter Act and such parts of the former as are within the scope of the main volume have been included with appropriate notes and references. All other relevant statutes and regulations since the publication of the main volume will also be found in the second part of this book and the first part contains such additions or amendments to the original text as have been rendered necessary by subsequent decisions and legislation.

In recommending this book it is unnecessary to say more than that the editors have dealt with the law up to date with their customary skill and care.

G. A. A.

BOOKS RECEIVED

REINFORCED CONCRETE ARCH DESIGN. (2nd. Ed.) By G. S Manning, MEng. (London: Sir Isaac Pitman and Sons, Ltd.) Price 30s.

INSTITUTE OF BUILDERS

Announcement of Awards

THE council of the Institute of Builders have approved the following awards subject to the preparation by the recipients of suitable itineraries.

Matthews/Macfarlane travelling studentships (£50 *each*).—Robert A. Mansell, Beckenham; Frank Cripps, Weston, Lincs.

Sapcote travelling studentships (£50 *each*). —David E. Chiverton, Bognor Regis; Charles W. Young, Mitcham.

These awards covering the 1953 and 1954 Licentiate Diploma examinations were for the two most deserving successful candidates in each year.

Their purpose is to assist the recipients to broaden their knowledge of any aspect of building through studying either at home or abroad and to this end the Institute assists with introductions.

Films About Building

By J. ROGERS,
(Film Officer, Building Research Station).

THE value of the film for presenting technical information is now widely recognised. It can attract attention, arouse interest and carry conviction to a much greater extent than the printed word. It is therefore not surprising that the film is being more and more widely used by commercial firms and trade associations for advertising their products and giving technical information about them. Several Government research establishments (including the Building Research Station) use the film to present information arising out of their researches; nationalised industries and public bodies use it to give information about their work; educational bodies sponsor various kinds of teaching films.

The films thus produced are hardly ever shown in public cinemas. They are made available on 16-mm. non-inflammable film stock, so that they may be safely shown anywhere without the need for special fire precautions. They may be borrowed, free or at a small charge, by anybody who wishes to arrange a film show. 16-mm. projectors can usually be hired from a local photographic dealer: often the local education authority will be able to help in this connection.

DEMAND FOR FILMS

The Building Research Station has found that the demand for films about building is very considerable. Its own films (which are lent out by the Ministry of Works) secured over 1,100 showings during 1953, to audiences totalling 73,000; this is only a small figure compared with the circulation obtained by the larger distributors of technical film. It is, however, large enough to indicate the nature of the demand for building films.

There is, in the first place, a big demand from schools and technical colleges for all kinds of teaching and technical films. The many professional associations connected with building also borrow films to show at their meetings. Building employers' associations, foremen's and clerks of works groups, and trade unions also arrange film shows for their members. Some large firms show technical films to their employees; local authorities show them to their staff and to their housing committees. Housing associations, self-build groups, units of the armed forces and the fire service, prison authorities and Government departments, all borrow films about building.

It is not easy for would-be borrowers to get to know of the existence of all the films that are available; it is still less easy for them to discover whether they are suitable for their requirements. Although there are several large film libraries which distribute a great many films, many others are distributed by small specialist film libraries and by the firms sponsoring the films. These are numerous: 80 film distributors are included in the Building Research Station's card index, which is by no means comprehensive. Moreover, the distributors' film lists do not do more than give a brief summary of the contents of the film; it is difficult for the borrower to judge from this its suitability for his requirements.

CRITICAL APPRAISAL

Various attempts have been made to overcome these difficulties. Some professional associations compile lists of films likely to be of interest to their members. The need for a critical appraisal of films and an assessment of their suitability for various audience types was recognised many years ago by the Scientific Film Association (a voluntary organisation formed to promote the production and use of scientific films) and this body has for many years carried out appraisals of technical films on many different subjects. In their method the films are viewed by a panel including persons experienced in the production of films and in their use for presenting technical information, and experts in the subject-matter of the film.

While film appraisal, like other forms of art criticism, is not an exact method of assessing merit, it is claimed that the Scientific Film Association's method will help users to choose films with a much greater chance of success than reliance on catalogue summaries of contents or on titles only. In 1950, with the help of the London and Home Counties Regional Advisory Council for Higher Technological Education, the Scientific Film Association formed a panel to specialise in appraising films connected with building. The panel included building teachers, heads of building departments at technical colleges, architects, and members of the Scientific Film Association's standing Appraisal Committee. This has resulted in the publication of two catalogues, "Educational Films Connected with Plumbing," covering 56 films, in 1952, and "Films on Building Construction," covering 58 films, in 1953, obtainable from the Scientific Film Association, 164, Shaftesbury-avenue, London, WC2, price 2s. 6d. each.

The information given about each film includes its title, gauge and running time; whether sound or silent, colour or monochrome; country and date of production; and names of sponsor and distributor. A summary of its contents, critical appraisal and assessment of suitability for various audiences are added.

The panel is continuing to appraise new building films as they become available, and supplementary catalogues will be published from time to time. In order to secure earlier publication of its appraisals, it has arranged to publish these in *The Builder* at approximately monthly intervals; this will have the further advantage of ensuring a wide circulation among users of building films.

BUILDING FILMS—LIST No. 1

The letters (H) or (F) after the title of each film signifies Hire Charge, or Free Loan; "16 sd." indicates 16-mm. sound film; "16 st." denotes 16-mm. silent film; "b and w" means "black-and-white." Below the titles are given the names of the sponsor and producer.

A CONCRETE PROPOSITION (F), 16sd, b&w, 18 mins. Britain, 1951. (Ductube Co., Ltd.—Lombard Films, Ltd.). *Distributor*: Ductube Co., Ltd., 235-241, Regent-street, London, W1.

Content: Brief review of expanding use of concrete for constructional purposes. Use of Ductube, an inflatable pneumatic tubing, to form passages through concrete; particulars of sizes available. Examples of use: radio relay installation, electrical installation in buildings, power station cable system, electrification of air field, precast concrete units, particularly in prestressed concrete construction.

Appraisal: Useful straightforward presentation of a single constructional idea. Teaching value would justify time spent in showing for a wide range of classes. (Appraised March 1, 1954.)

Made for: Building and civil engineering technicians.

Recommended for: Specialists, technical colleges, adult training.

Suitable for: Scientific film societies, secondary technical schools, part-time craft courses.

Unsuitable for: General audiences.

MOSCOW CONSTRUCTIONS (H), 16sd., colour, 35 mins. USSR, 1951. (Central Documentary Film Studios). *Distributor*: Plato Films, Ltd., 376 Gray's Inn-road, London, WC1.

Content: Plan for reconstruction of Moscow, modern developments, underground railway, bridges, streets, canal. Large-scale housing; reinforced concrete and masonry construction; prefabricated units; use of plaster boards; ceramic facings. Use of tower cranes for large-scale construction. Moscow State University.

Appraisal: Produced primarily for propaganda purposes; technical content, although very interesting, is not presented in the most effective way. Rather muddled and repetitive treatment limits value for technical instruction. (Appraised February 1, 1954.)

Made for: Non-technical audiences.

Suitable for: Adult training, specialists, scientific film societies, general audiences, technical colleges.

Unsuitable for: Secondary technical schools.

SANDS FOR CONCRETE (F), 16sd, b&w, 8 mins. Britain, 1953. (Building Research Station DSIR—Building Research Station F.U.). Distributor: Film Officer, Ministry of Works, Lambeth Bridge House, London, SE1.

Content: Explains the effect of the properties of the sand, particularly its fineness, on the workability and quality of the concrete, and how the builder can adjust his mix proportions to suit different sands.

Appraisal: An introduction to a very important aspect of concrete. Could with advantage be shown to students before carrying out experiments in the laboratory. Simple, straightforward presentation, good photography. (Appraised February 1, 1954.)

Made for: Builders and civil engineering contractors, clerks of works.

Recommended for: Specialists, technical colleges, adult training.

Suitable for: Scientific film societies, secondary technical schools.

Unsuitable for: General audiences.

SOILS AND FOUNDATIONS (F) 16sd, colour, 21 mins. Australia, 1952. (Commonwealth Government of Australia—C.S.I.R.O. Film Unit). *Distributor*: Australian Scientific Liaison Office, Africa House, Kingsway, London, WC2.

Content: Damage to buildings through unsatisfactory foundations. Properties of Australian soils; expansion on wetting and shrinkage on drying shown by black earth and some clays; resulting seasonal movement of surface; effect of differential movements on buildings; how damage may be avoided by building on pile foundations. Bored pile and driven pile foundations; under-reaming to prevent upward movement of piles; precautions to be taken.

Appraisal: A clear statement of a serious problem and its solution. Good animated diagrams and examples of soil profiles: use of colour is helpful. Applicable mainly to Australia and other countries where seasonal soil movements are large: emphasises danger from swelling (which is important in Australia, but much less so in Britain) as well as the danger from soil shrinkage which is serious in Britain. (Appraised March 1, 1954.)

Made for: Architects, engineers and house builders.

Recommended for: Specialists, scientific film societies, advanced students in technical colleges.

Suitable for: General audiences, technical colleges, adult training secondary technical schools.

DRY CONSTRUCTION PARTITIONS

(*Continued from page* 142)

can be fixed reasonably easily, the client, when he has forgotten the architect, will try to fix things of a heavier or much bulkier nature to the partition and will find trouble.

ALLEN: The answer to almost all the problems can reasonably come from industry, but sound insulation is the problem causing most trouble. One does not require 18-in. brickwork, one does not even get that between houses. There have been innumerable disappointments in this field. A great many manufacturers are making products which consist of two sheets put together with plaster or latex of some kind. Many clients are quite happy but some have been unhappy about the degree of sound insulation achieved. I found one extremely embarrassing example where, with two sheets of hardboard, sound insulation is down to about 17 decibels. That is not enough. Indeed, to some people who expect reasonable separation, that almost sounds like amplification. One needs rather more weight. We must seek cleverer ways of doing the job than using two skins. We must seek some form of energy damping, some material which has in it, in fact, much more damping. There are big differences in materials and we must wait for time to show which are the better ones.

MECHANICAL JOINTING

MR. DE SYLLAS: So much so-called dry partitioning today is not dry partitioning. One of the first problems is to develop a system which is generally dry. I have no particular dogma that wet construction is old and therefore bad; but so many forms of structure today are becoming increasingly light and, as fire-resistance methods are improving, one tends to get an increase of movement in buildings. We have all seen dry construction partitions which start breaking and cracking and generally misbehaving because they cannot cope with the movement of the building. The first specification in dry construction partitions is that they should remain constant. I do not believe that the use of mastic in curtain walling is dry construction. The whole problem of a joint is that it should be moveable and not liable to cease being weatherproof when the stopping ceases to work. The future of all forms of construction such as these lies in mechanical joints, not adhesions.

MILLS: I am convinced you are absolutely right and that "bunging it up" and hoping for the best is not at all the answer. We must develop mechanical joints to have a system which will react to the very considerable movement we are getting in our larger buildings.

MR. L. PARK: As no other architect has taken Mr. Rayden to task, I must do so. He says we ought to ask only one useful quality of every material. That is permissible with a limitless budget but we must try to get things cheaper and use materials which are useful all-rounders. Brick has been mentioned as a material with many useful qualities, but until architects have a lot more money they will continue to ask for materials which will do a number of jobs. It is unrealistic to suggest assigning only one job to each material.

THE CHAIRMAN: In Mr. Rayden's defence I would point out that he said we must look for a compromise. I will now ask Mr. Allen to sum up.

SORTING-OUT NEEDED

MR. ALLEN: We do not wish to leave the impression that we are at all cynical about the eventual success of these things, but we do want to create in the mind of manufacturers who are here the impression that we have a lot of sorting out to do. We expect a fair amount of collaboration in business in order to solve these problems successfully. We want them also to get the feeling of the profession and to know the kind of problems they are facing. Architects invent problems which have to be solved and ought to invent sensible problems if they want them solved reasonably well and quickly.

We tied the discussion down to three forms of dry construction because they were most representative of the problems. I believe architects are being sensibly cautious and careful in using this technique without being afraid of it. There is an enormous amount going forward and, within eighteen months—if we are all willing to face the problems and can find some way of telling each other our findings—we shall have made real progress. It is especially important to find some means of communication between us, because buildings are to be built in this technique within the next eighteen months in greater numbers than we have built since the War. Materials and technical problems must therefore be dealt with quickly.

It may not be out of order for a particular person to tell you that there is shortly to be an announcement of a new paint colour range from the RIBA and the Paint Industry which will be the basis of Government purchase. It is an architects' range for building and public use and will be the best range ever offered in the world. We want manufacturers to manufacture on that range so that when we start decorating buildings we may work with those.

MILLS: It was suggested at Torquay that the BRS should set up a Success Department where people could report successes achieved with new techniques. Perhaps we might prod them on that.

ALLEN: There have been quite a few successes reported.

THE CHAIRMAN: Before closing we should like to thank the Cape Asbestos Company for taking the initiative in starting this form of talk or "Colloquium."

MR. GILES NEWTON (Cape Asbestos, Ltd.) responded.

HULL'S BUILDING PROGRAMME

There were at least 15,500 slum houses unfit for habitation in Hull and the movement of slums would represent at least 20 years' endeavour in Hull, said MR. D. F. OFFORD, Deputy Hull Town Planning Officer, speaking at a Hull meeting on January 12. In the central area of Hull, the Central College of Technology was already started and the police station was about to be started. It was hoped to enlarge the Guildhall and already much had been achieved regarding development of the shopping block in the city.

CONSTRUCTION FROM CONIFER THINNINGS

Forestry Commission's Proposals

A PLAN for using conifer thinnings from Britain's forests to build houses was announced by LORD RADNOR, chairman of the Forestry Commissioners, at a Press conference held in London on January 13 by the Timber Development Association. A prototype building largely constructed of these thinnings had already been erected by the commissioners as part of the plan at Santon Downham, Suffolk. The building was to be used by the Commission as offices, and tests on the weathering and insulation of the components were being made. The timber used was spruce, larch, and pine.

Lord Radnor said it had been estimated that the total potential production of conifer thinnings by 1970 would be 38m. cu. ft., double that of 1950. Certain outlets for these thinnings, such as pit-props, box-making, and pulp, already existed, but a new outlet was important. The Timber Development Association was, therefore, exploring the possibility of an entirely new use in the construction of rural houses and other buildings.

MR. P. O. REECE, director of the development association, said tests with the trial building would occupy about a year. He was satisfied with the durability and fire-resisting properties. The concern, he said, had been with two problems. The forestry aspect was to provide new uses for small, sappy timber in short lengths and small sizes, and to solve associated difficulties of waste, grading, and kilning. The other was to devise a system of construction that could be widely and easily applied.

The reaction to the building problem was to design panels that could be easily prefabricated and hung on timber frames. All the panels were based on a modular dimension of 40 in. to conform to a modern trend.

GLASS-CLAD BUILDINGS

Birmingham Scheme to Combat "Smog"

Two blocks of skyscraper factory flats to be built in Birmingham will be panelled with huge sheets of coloured glass to make them "smog"-proof. In these buildings will be the "flatted" workshops of those small city firms displaced by rebuilding in the city's redevelopment areas.

Thousands of pounds' worth of damage in Birmingham is being effected each year by "smog." Cleaning down large buildings has been costly, and often involved the scraping of the top surface of stone. On the glass-curtained buildings, a "wipe down" only will be necessary to keep them clean. Other buildings in the city—particularly office premises—may also be built with glass-panelled walls.

The new buildings, to be situated at Dartmouth-street and Bath-row, will be seven and eight storeys high. Building will start in March and the cost is expected to be £500,000 for the scheme. The ground floors will be the normal exposed brickwork, but the upper outside walls would be formed by alternate bands of clear glass for windows and coloured glass plating over brickwork. Nearly 100 firms—mainly light manufacturing concerns—will be accommodated.

The Builder

CURRENT PRICES OF MATERIALS

THE information given on these pages has been specially compiled for *The Builder* and is copyright. It is the intention that the details given should indicate fair average prices of materials not necessarily the highest or the lowest. The prices apply to large quantities of materials loaded at works, delivered at London Stations or at site in London Area as stated. Prices for smaller quantities ex merchants warehouse will necessarily be higher so as to include the stocking and handling costs involved. Due to the exceptional circumstances now prevailing it is recommended that the prices of materials should be confirmed by inquiry from suppliers and merchants.

AGGREGATES AND SAND

Delivered site in full lorry loads. Average of prices for Boroughs of Westminster, Paddington, Holborn and St. Pancras.

		£	s.	d.
Pit Ballast	per yd.	1	3	1
Pit Sand	,,	1	1	8
Washed Sand	,,	1	3	8
¾ in. Shingle	,,	1	0	0
¾ in. Broken Brick	,,		19	3
Pan Breeze	,,		9	6
Fine or Coarse Foamed Slag Aggregate	per ton	3	0	9
2 yds. of fine and 2.6 yds. of coarse per ton				

CEMENT, etc.

Including non-returnable jute sacks or paper bags.

		£	s.	d.
Best British Portland Cement. Standard Specification delivered Charing Cross area.				
6-ton loads and upwards, site	per ton	4	16	6
1 to 6 tons, site	,,	5	5	6
Rapid Hardening Cement in 6-ton loads and upwards to site	,,	5	4	6
1 to 6 ton do. site	,,	5	13	6
Aquacrete Water Repellent Cement. 32s. 6d. per ton on ordinary cement prices.				
Red, Buff or Khaki Colorcrete in 6-ton lots ...	,,	6	18	0
Other colours according to colour.				
In 4-ton lots from 211s. 9d. to 435s. 9d. per ton.				
White Portland Cement	,,	12	17	0
Under 1 ton	per cwt.		15	4
417 Cement (Ultra Rapid Hardening) in 6-ton lots and upwards	per ton	6	9	0
Super Cement (Waterproof), 32s. 6d. per ton above Portland Cement.				
Cullamix Tyrolean Finish, £9 4s. 3d. to £10 17s. 9d. (1-ton loads and upwards).				
Lightning and Ciment Fondu Brands High Aluminous cement, 6-ton lots and up	,,	14	0	9
Stourbridge Fireclay, 6-ton loads at Railway Depot, London	,,	6	2	3

BRICKS

		£	s.	d.
Full Loads.				
First Hard Stocks	per 1,000	11	7	0
Second Hard Stocks	,,	10	11	0
Mild Stocks	,,	8	16	6
All loaded free into lorry at the works. The question of haulage is still very difficult and prices must be obtained from job to job.				
2½ in. Nominal Fletton Bricks to sites in W.C.				
District Commons	,,	5	13	0
Cellular do.	,,	5	13	0
Keyed do.	,,	5	15	0
Rustics	,,	6	18	0
Cellular Rustics	,,	6	18	0
Single Bullnose do.	,,	6	13	0
Sandfaced	,,	7	13	0
Best Blue Pressed Staffs (London Stations) ...	,,	24	19	6
Do. Bullnose (London Stations)	,,	25	13	6
Blue Wire Cuts (London Stations)	,,	22	11	0
Midhurst Lime Bricks (London Sites)	,,	10	3	0
Uxbridge Whites (London Sites)	,,	9	1	6
2½ in. Best Stourbridge Fire Bricks (London Stations)	,,	24	6	0
3 in. do. (London Stations)	,,	29	3	3
2½ in. Machine-made Sandfaced Red Facings (London Sites)	,,	13	19	6
2½ in. Machine-made Multi Red Facings (London Sites)	,,	14	4	6
2½ in. Hand-made Sandfaced Red Facings (London Sites)	,,	14	11	0
2½ in. Hand-made Sandfaced Multi-Colour Facings (London Sites)	,,	14	11	0
Hand-made Sandfaced Cherry Red Facings. Berkshire district (London Sites)	,,	17	5	6
Hand-made Sandfaced Multi Colour Facings. Berkshire district (London Sites)	,,	17	5	6
Rubber Bricks for gauged arches (London Sites) ...	per 1,000	41	10	0
2½ in. Surrey Clamp Burnt Multi Stock Facings (London Sites)	,,	13	6	0
2½ in. Surrey Kiln Burnt Multi Stock Facings (London Sites)	,,	14	4	6
Glazed Bricks (London sites), White, Ivory, Brown—				
Stretchers	,,	64	0	0
Headers	,,	63	0	0
Quoins, Bullnose and 4½ in. Flats	,,	80	0	0
Double Stretchers	,,	85	0	0
Double Headers	,,	77	10	0
One side and two ends	,,	87	0	0
Two sides and one end	,,	89	10	0
Splays and Squints	,,	83	0	0
Cream and Buff £3 extra over White. Other colours, hard glaze, £8 10s. 0d. extra over White. All above prices plus 7½% for Best quality and plus 7½% less 10% for Second quality.				

PARTITION SLABS, etc.

Delivered Central London Area.

HOLLOW CLAY PARTITION BLOCKS (Keyed)

	Minimum lorry loads.		£	s.	d.
2 in.	140 yds.	per yd. sup.	4	3	
2½ in.	140 yds.	,,	4	6	
3 in.	120 yds.	,,	5	2	
4 in. (6 cavity) ...	95 yds.	,,	6	7	
Half blocks at no extra charge.					

CLINKER CONCRETE.

			£	s.	d.
2 in.	100 yds.	,,	3	7	
2½ in.	85 yds.	,,	4	2	
3 in.	75 yds.	,,	5	0	
4 in.	55 yds.	,,	6	2	

CRANHAM

		£	s.	d.
2 in.	,,	6	8	
2½ in.	,,	7	4	
3 in.	,,	8	7	
4 in.	,,	10	7	
4½ in. Load bearing quality	,,	11	8	

FLOOR BLOCKS

		£	s.	d.
3 in. Floor Blocks 12 in. by 12 in. delivered in full lorry-loads	per 1,000	32	11	0
4 in. do.	,,	34	18	0
5 in. do.	,,	41	11	0
6 in. do.	,,	46	16	0
7 in. do.	,,	56	18	0
8 in. do.	,,	66	14	0

STONEWARE DRAIN PIPES, etc.

The following are the percentages to be added to the Standard List prices delivered London Area.

	Over 2 tons	Over 100 Pieces under 2 tons	Under 100 Pieces under 2 tons
Best Quality	+67½%	+97½%	+107½%
B.S.S. Best do.	+10% +67½%	+10% +97½%	+10% +107½%
Tested Quality	+37½% +67½%	+37½% +97½%	+37½% +107½%
B.S.S. Tested do.	+47½% +67½%	+47½% +97½%	+47½% +107½%

		£	s.	d.
3 in. Land Drain Pipes (in 12 in. lengths)	per 1,000	10	13	6
4 in. do.	,,	14	2	0

STONE

		£	s.	d.
Bath Stone—				
Monks Park	per ft. cube		7	10
St. Aldhelm Box Ground	,,		8	10
Delivered in railway trucks at South Lambeth B.R. Western Region				
Doulting Stone Random Blocks. Delivered London area	,,		8	4
Beer Stone. Delivered London area	,,		8	0
Portland Stone—				
Brown Whitbed in random blocks, 20 ft. average delivered in railway trucks at Nine Elms, B.R. Southern Region	,,		8	1½
Yorkshire Stone—Blue Robin Hood Quality.				
Delivered to site London in 6-ton lots.				
9 in. × 3 in. Rubbed, weathered, throated and stooled cills	per ft. cube	3	4	3
12 in. × 6 in. do. do.	,,	2	6	0
12 in. × 3 in. Plain coping, twice throated ...	,,	1	15	4
12 in. × 3 in. Weathered and twice throated coping	,,	2	7	4
14 in. × 6 in. do. do.	,,	2	2	8
4½ in. × 9 in. Plinth, rubbed on top and face ...	,,	1	18	1
3 in. sawn two sides Slabs, random sizes ...	per ft. sup.		6	9

STONE—*continued*

		£	s.	d.
Templates and Cover Stones, 3 in., 4 in. and 6 in. thick, edges coped for rendered brickwork ...	per ft. cube	1	3	5
Do. do. fair one edge for fair faced brickwork		1	7	10
Hard York—				
12in. × 2in. Square Steps, rubbed on top and edge	per ft. run		8	2
14 in. × 3 in. Round-nosed Steps, rubbed on top and front	per ft. cube	2	3	8
12 in. × 6 in. Plain Steps, rubbed top and front ...	,,	1	18	3
2 in. Rubbed and Jointed Paving, given sizes ...	per ft. sup.		7	10
2 in. Sawn Paving, edges squared, in random sizes	per yd. sup	2	13	10

TILES and PANTILES

Delivered London area by road in 6 tons or over per 1,000

Machine-made Pantiles and French pattern Tiles from Lincolnshire district	29	8	0
Hand-made Pantiles Berkshire district	47	10	0
Hand-made Double Roman Bridgwater district	58	13	6
Hand-made 10½ × 6½ tiles Berkshire district	13	1	9
Machine-made 10½ × 6½ Staffordshire district	13	8	9
Hand-made Hip and Valley tiles per doz.	1	8	9
Machine-made Hip and Valley tiles do.	1	6	6
Concrete tiles 10½ × 6½	7	14	6
do. Interlocking (49S)	18	9	6

NOTE.—Breakage in transit, purchasers' responsibility.

SLATES

First-quality Slates from Penrhyn or Portmadoc, carriage paid in full truck loads to London Rate Station. Per 1,000 actual

24 × 12	113	0	4
22 × 12	93	16	0
22 × 11	84	15	0
20 × 12	79	19	6
20 × 10	74	12	0
18 × 10	53	18	9
18 × 9	47	5	6
16 × 10	44	7	0
16 × 8	34	10	6

NOTE.—Breakage in transit, purchasers' responsibility.

TIMBER

Softwood—							
Joinery quality	Ex. Wharf	per standard		£110 to £130		
Carcassing quality	do.	,,		£95 to £100		
1 in. Tongued and Grooved Flooring	do.	,,		£106	0	0
Hardwood—							
Mahogany—African S.E. ...	do.	per ft. cube		1	5	0
do. Honduras do. ...	do.	,,		3	5	0
Oak European do. ...	do.	,,		2	2	6
do. Japanese do. ...	do.	,,		2	10	0
do. English Logs sawn	do.	,,		1	10	0
Teak 8 in. average S.E.	do.	,,		3	5	0
Walnut African Logs sawn	do.	,,		1	1	6

DOORS (in Lots I-II)

Delivered London area.

1½ in. 4 Horizontal Panel Pattern 4 in. deal			
2 ft. 0 in. × 6 ft. 6 in.	each	1	12	0
2 ft. 3 in. × 6 ft. 6 in.	,,	1	13	0
2 ft. 6 in. × 6 ft. 6 in.	,,	1	14	0
2 ft. 9 in. × 6 ft. 6 in.	,,	1	16	6
2 in. do. but top panel open. Pattern 4 × G in deal				
2 ft. 6 in. × 6 ft. 6 in.	,,	2	9	0
2 ft. 9 in. × 6 ft. 6 in.	,,	2	11	6
2 in. Panel, top panel open. Pattern 2 × G in deal				
2 ft. 6 in. × 6 ft. 6 in.	,,	2	1	9
2 ft. 9 in. × 6 ft. 6 in.	,,	2	3	6

SUNDRIES

Delivered London area

1 in. Wood Wool Slabs, 6 ft. 0 in. × 2 ft. 0 in. in quantities of 1 ton (89 yds. to 1 ton)	per yd.	5	8	
1¼ in. do. (67 yds. to 1 ton)	,,	7	4	
2 in. do. (52 yds. to 1 ton)	,,	8	11½	
2½ in. do. (45 yds. to 1 ton)	,,	10	3	
3 in. do. (39 yds. to 1 ton)	,,	11	5½	
Quantities under 1 ton add 1d. per ½ in. of thickness.				
¼ in. imported insulation Board, quantities over 5,000 sq. ft.	per 100 sq. ft.	2	2	6
¼ in. Hardboard do.	,,	2	1	6
⅜ in. do. do.	,,	3	2	6
⅛ in. Asbestos Flat Building Sheets ...	per yd. sup		3	2
Roofing Felt, 1-ply	,,		1	6
do. 2-ply	,,		1	9
Best Scotch Glue, in slabs	per ½ cwt.	5	0	0
do. pearl	,,	5	5	0
Croid Glue	28 lb.	2	6	0
Cut Nails 3 in. (1-ton lots)	per ton	58	5	0
do. 4 in. and up (1-ton lots)	,,	54	15	0
Wire Nails, 3 in. (4-cwt. lots)	per cwt.	2	16	3
do. 4 in. and up (4-cwt. lots)	,,	2	12	9

METALS

STEEL JOISTS, ETC.

Basis Joists—			
6 in. × 5 in., 8 in. × 5 in., 8 in. × 6 in., 10 in. × 6 in. 12 in. × 6 in. plain cut to lengths delivered London area	per ton	38	11	6
Extra for sizes				
3 in. × 1½ in., 4 in. × 1½ in.	,	3	10	0
3 in. × 3 in.	,,	2	10	0
4 in. × 3 in., 10 in. × 4½ in.	,,	1	10	0
5 in. × 2½ in., 5 in. × 3 in.	,	1	15	0
4½ in. × 1½ in.	,	3	5	0

				£	s.	d.
5 in. × 4½ in.	7 in. × 3½ in.	13 in. × 5 in. ...	per ton		15	0
6 in. × 3 in.	24 in. × 7½ in.	... ...	,,	2	0	0
6 in. × 4½ in.	7 in. × 4 in.	8 in. × 4 in. ...	,,	1	5	0
9 in. × 4 in.	10 in. × 5 in.	... ...		1	0	0
12 in. × 5 in.	22 in. × 7 in.	... ...				
9 in. × 7 in.	10 in. × 8 in.	12 in. × 8 in.				
14 in. × 5½ in.	14 in. × 6 in.	14 in. × 8 in.				
15 in. × 5 in.	15 in. × 6 in.	16 in. × 6 in.	,,		10	0
16 in. × 8 in.	18 in. × 6 in.	18 in. × 7 in.				
18 in. × 8 in.	20 in. × 6½ in.	20 in. × 7½ in.				
Steel angles average price ...			,,	40	5	0
Steel tees average price			,,	41	5	0
Fabricated work delivered London—						
R.S. Joists cut and fitted ...			,,	54	0	0
Compound girders ...			,,	59	0	0
Stanchions			,,	64	7	6
Compound stanchions ...			,,	67	15	0
In Roof Work—Trusses and Purlins ...			,,	80	0	0
Average prices not for awkward work.						
Mild Steel Ferro-Concrete bars to BSS785 ex London						
Stock ⅝ in. diam., and upwards ...			,,	40	6	0
¼ in. diam.			...per ton extra	4	7	0
⅜ in. do.			,,	3	7	0
⅜ in. do.			,,	2	9	6
½ in. do.			,,	1	12	0

MILD STEEL TUBES

Tubes to BSS1387 and Fittings. List prices and following discounts:

Galvanised Tube—	W.I. Fittings	Malleable Fittings
Class A — 1%		
Class B + 8¼%	Light + 24%	Malleable List — 35% + 40%
Class C + 24½%	Heavy + 31½%	
Black—		
Class A — 21¼%		
Class B — 11%	Light + 11¾%	Malleable List — 35%
Class C + 1½%	Heavy + 19¼%	

C.I. HALF-ROUND GUTTERS

Delivered London per yd. in 6-ft. lengths

	Gutters	Nozzles	Stop Ends
3 in.	3/3½	2/11	/10
3½ in.	3/7	3/2	/10
4 in.	4/8	3/7	1/3
4½ in.	5/1	3/11	1/7
5 in.	5/8½	4/4	1/9

C.I.O.G. GUTTERS

3 in.	4/3	3/10	1/-
3½ in.	4/9	3/10	1/3
4 in.	5/2½	3/11	1/7
4½ in.	5/8½	4/7	1/9
5 in.	6/2	5/3	2/-

C.I. RAIN-WATER PIPES

Per yd. in 6-ft. lengths	Pipe	Bends	Branches
2 in.	6/9	3/7	5/1
2½ in.	7/0½	3/11	7/-
3 in.	7/11	5/-	7/7
3½ in.	8/11½	5/11	9/-
4 in.	10/5	7/2	10/8

L.C.C. COATED SOIL PIPES

2 in.	7/11½	6/2	7/6
2½ in.	8/5	6/10	9/4
3 in.	9/5½	7/6	11/2
3½ in.	10/7	9/4	12/11
4 in.	12/1	10/5	15/3

Above prices for gutters, rain-water and soil pipes for under 3 cwt. lot only. Lots over 3 cwt. see List No. 3200 dated May 1, 1952, plus 15% and tonnage allowance. 4-ton lots 5 per cent, 2-ton lots 2½ per cent.

L.C.C. COATED DRAIN PIPES

In 9-ft.

	cwt.	qr.	lb.	per yd.	Bends	Branches
4 in.	1	1	17	24/5	17/4	30/2
6 in.	2	0	1	36/3	36/-	61/9

ASBESTOS RAIN-WATER PIPES AND FITTINGS

Orders under £30 less 12½ per cent. discount.
Orders over £30 less 17½ per cent. discount.

	2 in.	2½ in.	3 in.	4 in.
Pipes 6-ft. lengths ...per yd.	3/9	4/-	4/10	6/5
Shoes ... ... each	2/5	2/8	3/2	4/3
Single Branches ... ,,	3/9	4/6	5/4	7/6
Bends square or obtuse ,,	2/8	2/11	3/9	5/4
Swan Necks 4½ in. proj. ,,	2/11	3/9	4/3	5/11
do. 6 in. do. ,,	3/2	3/9	4/10	6/5

ASBESTOS O.G. GUTTERS AND FITTINGS

	4 in.	4½ in.	5 in.	6 in.
Gutters 6-ft. lengths ...per yd.	3/7	3/11	4/8	5/7½
Drop ends ... ... each	2/10	3/4	3/10	4/7
Stop Ends ... ... ,,	/10	/11	1/-	1/2
Angles ... ... ,,	2/11	3/5	4/1	4/10
Nozzles ... ... ,,	2/10	3/4	3/10	4/7
Union Clips ... ... ,,	1/5	1/8	2/1	2/5

ASBESTOS HALF-ROUND GUTTERS AND FITTINGS

	3 in.	4 in.	4½ in.	5 in.	6 in.
Gutters 6-ft. lengths ...per yd.	2/6	2/11½	3/0½	3/7	5/-
Drop ends ... ... each	2/1	2/5	2/8	2/11	4/3
Stop ends ... ... ,,	/9	/10	/11	1/-	1/2
Angles ... ... ,,	2/5	2/8	2/11	3/2	4/3
Nozzles ... ... ,,	2/1	2/5	2/8	2/11	4/3
Union Clips ... ... ,,	1/-	1/1	1/2	1/4	2/-

METALS—*continued*

	Per ton basis in London £ s. d.
Iron—Staffordshire Crown Merchant Quality	41 17 6
Mild Steel Bars	37 14 0
Mild Steel Hoops	39 1 0

	Ex Merchant's Stock per ton Two-ton lots £ s. d.
Soft Sheets C.R. and C.A.—	
20 gauge	49 6 0
24 gauge	51 16 0
26 gauge	54 16 0
Galvanised Corrugated sheets 6 ft. to 9 ft.—	
20 gauge	55 12 6
24 gauge	59 2 6
26 gauge	64 7 6
Galvanised Flat sheets C.R. and C.A.—	
20 gauge	57 2 6
24 gauge	60 12 6
26 gauge	65 17 6

Plumbers' Brass Work, Copper, Zinc, etc.

Delivered in London area.

All per doz.	M.O.H. ½ in.	¾ in.	1 in	1¼ in.	1½ in.	2 in.
Screwdown bib cocks Crutch head for iron	77/-	114/6				
Toilet bib cocks for iron ...	99/-	142/-				
Screwdown stop cocks for iron	66/-	95/9	188/-	323/6	462/-	815/-
do. with two unions for lead	89/-	132/-	234/4	419/-	554/6	1234/3
Double nut boiler screws ...	16/6	23/3	42/-	43/-	59/6	83/8
Heavy Croydon ball valves ...	68/3	155/3	237/7	433/6	614/-	
Plumbers' union brass lead to iron	17/4	21/-	34/9	60/6	74/6	145/3

	1¼ in.	1½ in.	2 in.	3 in.	3½ in.	4 in.
Caps and screws	29/9	36/4	52/9	82/6	105/6	137/6
Brass sleeves		27/6	27/6	49/6	66/-	67/-

	1¼ × 6 lb.	1½ × 6 lb.	2 × 7 lb.	3 × 7 lb.
Lead P. trap with brass cleaning screws	63/6	79/6	127/-	217/3
Lead S. trap do.	77/-	95/-	156/3	281/-

Solder	s. d.
Plumbers' ... ... per lb.	3 5
Tinmen's ... ... ,,	4 2
Blow pipe ... ... ,,	4 3

Copper tubes BSS 659/1944 on the basic price of 34d. per lb. plus gauge and manufacturing extras as follows. Minimum quantities, 3 cwt.

	Extra d.	Total per lb. d.
¼ in. × 19 gauge ...	12½	46½
¾ in. × 19 ,, ...	10¾	44¾
1 in. × 18 ,, ...	9½	43½
1¼ in. × 18 ,, ...	8¾	42¾
1½ in. × 18 ,, ...	8¾	42¾
2 in. × 17 ,, ...	10½	44½

Rolled Copper sheets up to 48 in. wide, basic price plus gauge and manufacturing extras	per ton	352	15 0
Sheet Zinc 10 gauge (25 SWG) 5 cwt. lots upwards	per cwt.	8	1 6
do. 12 gauge (23 SWG) do. ...	,,	7	19 6
do. 14 gauge (21 SWG) do. ...	,,	7	18 3
Brass tubes basic price, plus gauge and manufacturing extras	per lb.	2	3⅜

LEAD SHEET AND PIPES

Basis selling price in minimum one-ton delivery to one address in London or Home Counties

		£	s.	d.
Lead Sheet, English, 3½ lb. substance and upwards	per ton	142	5	0
Lead Water Pipe in coils	,,	143	10	0
Lead Soil Pipe 10 ft. or over 2 in. to 4 in. dia. ...	,,	145	0	0
do. over 4 in. dia.	,,	147	0	0
Lead Gas or Untinned Compo pipe	,,	145	0	0
Extras over Basis for quantities under 1 ton				
5 cwt. and under 1 ton	per cwt.		2	0
3 cwt. do. 5 cwt.	,,		4	0
1 cwt. do. 3 cwt.	,,		6	0

Smaller quantities than 1 cwt. priced specially.

Supplying sheet lead and lead pipe to less than basis weights and cutting to sizes less than basis charged extra according to current trade schedule.

Allowance for Old Lead, collected £100 5s. 0d. per ton weighed at buyer's works.

PLASTER, etc.

Coarse Pink in 1-ton loads and over Delivered on Site	per ton	7	6 6
do. White do. do. ...	,,	7	14 3
Sirapite Coarse do. do. ...	,,	7	9 0
do. Fine do. do. ...	,,	7	17 0
Blue Lias Lime in 6-ton loads	,,	6	9 6
Hydrated Lime do.	,,	5	12 6
Lump Lime do.	,,	5	2 0
White Keen's or Parian Cement in 1-ton loads ...	,,	10	4 0
Pink Keen's or Parian Cement in 1-ton loads ...	,,	9	18 6
Granite Chips in 6-ton loads	,,	2	6 3
Hair	per cwt.	4	17 6
Gypsum Plaster Lath or Base Board ⅜ in. thick 600 yds. and over in one delivery. Delivered site ...	per yd.		2 2
1,200 yds.	,,		2 1½
Gypsum Plaster Wall Boards, 3 and 4 ft. wide, 6 to 12 ft., ½ in. thick, 600 yds. and over in one delivery. Delivered site	,,	2	5
1,200 yds.	,,	2	4½

PAINT AND DISTEMPER

Delivered London area		£	s.	d.
Ceiling Distemper	per cwt.	1	7	6
Washable Distemper	,,	5	5	0
Gloss Paint	per gal.	2	10	0
Snowcem cement paint (in 1 cwt. drums)	per cwt.	3	11	0

Lead Products and Oils.

Ground White Lead, 1 cwt. kegs	per cwt.	8	18	0
Genuine White Lead Paint, 1-19 gal. lots in 1 gal. tins	per gal.	3	2	0
Genuine Red Lead, Dry, 1 cwt.keg	per cwt.	7	1	3
Genuine Linseed Oil Putty, 1 cwt. keg	,,	2	9	0
Size XD quality, 28 lb.	per tin		9	0
Raw Linseed Oil (5 gal.) Drums extra	per gal.		12	0
Boiled Linseed Oil (5 gal.) do.	,,		12	6

Sundries.

Turpentine substitute (5 gal.) drums extra	,,		5	6½
do. do. (40 gal.) do. do.	,,		4	8½
Solignum, Brown (5 gal. cans) Exterior	,,		6	6
Creosote (40 gal. barrels)	,,		2	0
Paste Powder (1 lb. packets)	per lb.		1	6
White Lining Paper	per piece		1	0

VARNISHES, etc.

Delivered London area.		£	s.	d.
Oak Varnish, Outside or Inside	per gal.	1	12	6
Oak Pale Copal do.	,,	1	15	0
Hard Drying Oak for Inside	,,	1	17	6
Crystal Paper Varnish do.	,,	2	2	6
Eggshell Flat Varnish do.	,,	2	2	6
Finest Carriage Varnish	,,	2	10	0
Front Door Varnish	,,	1	17	6
Japan Gold Size	,,	1	10	0
Black Japan	,,	1	5	0
Brunswick Black	,,	1	0	0
Berlin Black	,,	1	5	0
Terebene	,,	1	5	0
Knotting (1 gal. bottles free)	,,	2	0	0
French and Brush Polish (do.)	,,	1	13	0

GLASS

Delivered London area.

	Per ft. super s. d.
18 oz. Sheet Glass Ordinary Glazing Quality. Cut Sizes	5⅞
24 oz. ,, ,, ,, ,, ,, ,,	7⅞
26 oz. ,, ,, ,, ,, ,, ,,	10
32 oz. ,, ,, ,, ,, ,, ,,	1 1
⅛ in. Rolled Plate	9
3/16 in. and ¼ in. Rough Cast	1 0
⅛ in. Figured Rolled and Cathedral, Standard patterns : White	9
do. Standard Tints	1 4½
do. Special Tints	2 9
⅛ in. Pinstripe, Hammerstripe, Reeded, Reedlyte and Luminating	1 1
¼ in. Wired Cast	1 2
¼ in. Georgian Wired Cast	1 2½

Hollow Glass Blocks—		Each
P.B.2	5¾ × 5¾ × 3⅝ in.	2 9
P.B.3	7¾ × 7¾ × 3⅝ in.	4 2
P.B.32	7¾ × 7¾ × 3⅝ in.	4 2

Radiused Corner Blocks to match up with—	
P.B.2	5 3
P.B.3	6 9
P.B.32	6 9

¼ in. Polished Plate Glass, G.G. Quality—	Per ft. super
In plates not exceeding 2 ft. sup.	3 7
,, ,, ,, 5 ft. sup...	4 5
,, ,, ,, 45 ft. sup.	5 1
,, ,, ,, 100 ft. sup.	5 6

¼ in. Polished Plate, extra sizes, *i.e.*, plates exceeding 100 ft. sup. or 160 in. one way or 96 in. both ways. G.G. quality—

Not exceeding 135 ft. sup. or 250 in. one way or 135 in. both ways	8 4
Not exceeding 180 ft. sup. or ditto	11 3
Not exceeding 200 ft. sup., or ditto	16 0

Plates exceeding 200 ft. sup. prices on application.

Substances other than ¼ in. Polished Plate at Special Prices.

Quantity Tariff—Sheet and Sundry Glass.

The following prices apply to minimum quantities of one size and one pattern delivered by the manufacturer to one site at one time.

Description of Glass	Minimum quantity	Per ft. super s. d.
18 oz. sheet O.Q.	3,000	4½
24 oz. ,, ,, ...	2,000	6
26 oz. ,, ,, ...	2,000	7⅛
32 oz. ,, ,, ...	2,000	10⅛
⅛ in. Rolled Plate	1,000	7⅛
⅛ in. Figured Rolled and Cathedral Standard Patterns, White	1,000	7⅛
⅛ in. Pinstripe, Hammerstripe, Reeded, Luminating and Spotlyte	1,000	10⅛
3/16 in. and ¼ in. Rolled Plate or Rough Cast ...	2,000	10⅜
¼ in. Wired Cast, Hexagonal	2,000	11⅞
¼ in. Georgian Wired Cast	2,000	1 0⅛

The Builder

CURRENT RATES OF WAGES

AS FROM OCTOBER 4, 1954. **(Every endeavour is made to ensure accuracy but we cannot be responsible for errors.)**

KEY TO SCHEDULE OF GRADE RATES.

Grade Classification.	A	A1	A2	A3
Craftsmen	3/9	3/8½	3/8	3/7½
Labourers	3/3½	3/3	3/2½	3/2

Town.	Grade.
Aberavon	A
Aberdare	A
Abergavenny	A
Abingdon	A2
Accrington	A
Addlestone	A
Aldeburgh	A2
Aldershot District	A2
Alfreton U.D.	A
Alnwick	A1
Altrincham	A
Amble	A1
Amersham	A1
Ammanford	A
Andover	A2
Ardingly	A2
Arundel	A2
Ascot	A2
Ashby-de-la-Zouch U.D.	A
Ashby Woulds U.D.	A
Ashford (Kent)	A2
Ashford (Middlesex)	A
Ashington	A
Ashtead	A
Ashton-under-Lyne	A
Aspatria and Brayton	A2
Atherstone R.D. (parts of)	A
Aylesbury	A2
Aylesby (Yorks)	A
Aylesham	A2
Bagshot	A2
Bakewell U.D.	A2
Banbury	A2
Barnard Castle U.D.	A
Barnoldswick U.D.	A
Barnsley	A
Barrow-in-Furness	A
Barrow-upon-Soar R.D (exc. Thrussington A2)	A
Barry	A
Basford R.D. (exc. Willough-by-on-the-Wolds A1)	A
Basingstoke	A1
Bath	A
Batley	A
Baxterley	A1
Beaconsfield & District	A1
Beamish	A
Bearl	A
Bearpark	A
Beccles	A2
Bedale R.D.	A
Bedford	A
Bedlington	A
Bedwas	A
Beeston & Stapleford U.D.	A
Belper U.D.	A
Belton	A
Berkhamsted	A
Berrington	A1
Berwick District	A
Beverley	A
Bexhill-on-Sea	A2
Biggleswade	A2
Billericay	A
Billing	A
Billingham U.D.	A
Bilsthorpe	A
Birchington	A2
Birkenhead	*
Birmingham C.B.	†A
Bishop Auckland	A
Bishop's Stortford	A
Bispham	A
Blackburn	A
Blackpool	A
Blackwell R.D.	A
Blaydon U.D.	A
Blidworth	A
Blyth	A
Bognor Regis	A2
Boldon U.D.	A
Bolsover U.D.	A
Bolton	A
Bourne End	A1
Bournemouth District	A
Bracknell	A2
Bradford	A
Bradford-on-Avon	A2
Braintree	A1
Breconshire, County of...	‡A2
Brent Knoll	A2
Brentwood	A
Bridlington	A
Brierfield	A
Brighouse	A
Brighton	A
Bristol	A
Broadstairs	A2
Bromsgrove U.D.	A
Brough	A
Broughton (Cheshire)	A
Buckley	A
Bungay	A2
Burnham-on-Crouch	A2
Burnley	A
Burton-on-Trent C.B.	A
Bury	A
Bury St. Edmunds	A1
Buxton	A
Byfleet	A1
Calder Valley	A
Cambridge	A
Cannock U.D.	A
Canterbury	A2
Cardiff	A
Cardiganshire, County of	‡A2
Carlisle	A
Carmarthenshire, Cnty of	‡A2
Caernarvonshire, Cnty. of	‡A2
Carnforth	A
Castleford	A
Caterham	A
Chapel-en-le-Frith	A
Charmy Down	A
Chatham & District	A1
Cheadle (Staffs) R.D.	A
Chelmsford	A
Cheltenham	A
Chepstow	A1
Chertsey	A
Chester	A
Chesterfield M.B.	A
Chesterfield R.D.	A
Chester-le-Street U.D.	A
Chichester	A2
Chippenham (inc. Chippen-ham Within and Harden-huish)	A2
Chorley	A
Clacton	A1
Cleethorpes	A
Clevedon	A1
Cleveleys	A
Clitheroe	A
Coalville U.D.	A
Cobham (Surrey)	A
Colchester	A
Colne	A
Colwyn Bay	A1
Congleton	A1
Consett	A
Conway	A1
Cornwall, County of	‡A2
Coventry C.B.	A
Cranbrook	A2
Cranleigh	A2
Crawley (Sussex)	A1
Crewe	A
Cromer	A1
Crowborough	A2
Cuckfield	A2
Dalton-in-Furness	A
Darlington District	A
Darwen	A
Deal	A2
Denbigh Town	A2
Derby C.B.	A
Devizes	A2
Devon, County of	‡A2
Dewsbury	A
Didcot	A2
Diss	A2
Doncaster C.B.	A
Dorking	A
Dorset, County of (except-ing Poole, Swanage and Wimborne Al)	A2
Dover	A2
Dovercourt	A
Driffield U.D.	A1
Droitwich M.B.	A
Dudley M.B.	A
Dunstable	A
Durham City	A
Eastbourne	A
E. Glam. & Mon. Val.	A
East Grinstead District	A2
Eastwood (Notts.) U.D.	A
Ebbw Vale & District	A
Edenbridge	A2
Ely	A2
Epping	A
Exeter	A
Fakenham	A2
Falmouth	A2
Fareham	A
Faversham	A2
Felixstowe	A1
Filey U.D.	A
Fleetwood	A
Flint	A
Folkestone	A2
Frinton	A1
Frome	A1
Gainsborough U.D.	A
Gateshead	A
Gillingham (Kent)	A1
Glossop	A
Gloucester	A
Gloucestershire, Cnty. of	‡A2
Godalming	A2
Goole M.B.	A
Gosport	A
Grantham M.B.	A
Gravesend	A
Great Yarmouth	A
Grimsby C.B. & R.D.(part)	A
Grimsby R.D. (remainder)	A2
Guildford District	A2
Guilsborough	A1
Guiseley	A
Halesowen M.B.	A
Halifax	A
Halstead	A2
Haresfield	A1
Harlow	A
Harpenden	A
Harrogate	A
Hartlepool	A
Harwich	A
Haslemere	A2
Hastings	A2
Hatfield (Herts.)	A
Haywards Heath	A2
Hemel Hempstead	A
Henley-on-Thames	A2
Hereford	A2
Herefordshire, Cnty. of	‡A2
Herne Bay	A2
Hertford	A
Hexham U.D.	A
Heysham	A
High Wycombe	A1
Highworth	A2
Hinckley U.D.	A
Hitchin	A
Hoddesdon	A
Horley	A2
Horsham	A2
Horwich	A
Huddersfield	A
Hull	A
Hunstanton	A2
Huntingdon (Staffs)	A
Ilkley	A
Ingatestone	A1
Ipswich	A
Isle of Sheppey	A2
Isle of Thanet	A2
Isle of Wight	A2
Jarrow M.B.	A
Keighley	A
Kendal	A
Kenilworth U.D.	A
Kettering M.B.	A
Keynsham	A
Kidderminster M.B.	A
King's Lynn	A1
Kingskerswell	A1
Kingsteignton	A1
Kirkham	A
Knaresborough U.D.	A
Knowle	A1
Lancaster	A
Leamington M. B.	A
Leatherhead	A
Leeds	A
Leicester C.B.	A
Leighton Buzzard	A1
Letchworth	A1
Lewes	A2
Lichfield M.B.	A
Lincoln C.B.	A
Littlehampton	A2
Liverpool	*
Llandudno	A1
Llanelly	A
London	*
Long Eaton	A
Loughborough M.B.	A
Louth M.B.	A2
Lowestoft	A
Loxton	A2
Luton	A
Lyneham (Devon)	A2
Macclesfield	A
Maidenhead	A1
Maidstone	A1
Maltby	A
Maldon (Essex)	A1
Malvern U.D.	A1
Manchester	A
Manningtree	A1
Mansfield M.B.	A
March	A2
Margate	A2
Market Harborough U.D.	A
Maryport	A
Matlock U.D.	A1
Melksham	A2
Melton Constable	A2
Melton Mowbray U.D.	A1
Merthyr	A
Middlesbrough	A
Middleton	A
Middlewich	A
Milford Haven	A1
Morecambe	A
Morley	A
Mundesley	A2
Nantwich	A
Nelson	A
Newark-on-Trent R.D.	A1
Newbury	A2
Newcastle-on-Tyne	A
Newcastle-under-Lyme	A
New Forest District	A1
Newmarket	A1
Newport, Mon.	A
Newport Pagnell	A2
Newton Abbot	A1
Northallerton Dist.	A
Northampton C.B.	A
North Shields	A
Norton Radstock	A1
Norwich	A
Nottingham C.B.	A
Nuneaton M.B.	A
Oakham U.D.	A2
Oldham	A
Ongar	A
Ormskirk	A
Ossett and Horbury	A
Oxford	A
Oxted	A1
Paignton	A1
Peterborough	A
,, Soke	A1
Pickering	A3
Plymouth	A
Pontefract	A
Pontypridd District	A
Portishead	A
Portland Stoneyards	A
Portsmouth	A
Port Talbot	A
Preston	A
Pudsey	A
Pulborough	A2
Radnorshire, County of	‡A2
Ramsgate	A2
Rayleigh	A
Reading	A
Redcar B.	A
Redditch U.D.	A
Redhill and Reigate	A
Ripon	A3
Rochdale	A
Rochester	A1
Rotherham	A
Rugby M.B.	A
Saffron Walden	A2
St. Albans	A
St. Helens	A
St. Neots	A2
Salisbury City	A2
Salisbury Plain	A2
Sawbridgeworth	A
Saxmundham	A2
Scarborough	A
Scunthorpe	A
Selby	A
Sevenoaks	A1
Sheerness	A2
Sheffield	A
Shipley	A
Shoeburyness	A
Shoreham	A
Shrewsbury M.B.	A
Sittingbourne	A2
Skegness U.D.	A1
Skipton U.D.	A
Sleaford U.D.	A2
Slough	A
Smethwick C.B.	†A
Snettisham	A2
Somerset, County of	‡A2
Southampton	A
Southend-on-Sea Dist.	A
Southport	A
South Shields C.B.	A
Spalding U.D.	A2
Stafford M.B.	A
Staines	A
Stamford M.B.	A1
Stantonwick	A
Stevenage	A
Stockport	A
Stockton R.D.	A
Stockton-on-Tees	A
Stoke-on-Trent C.B.	A
Stoke Orchard	A1
Stourbridge M.B.	A
Stourport U.D.	A
Stowmarket	A1
Stratford-on-Avon M.B.	A
Sunderland District	A
Sunningdale	A1
Sutton Coldfield M.B.	A
Swaffham	A2
Swanage	A1
Swansea	A
Swindon	A
Swinton U.D.	A
Tamworth M.B.	A
Tenterden	A2
Tewkesbury	A1
Thames Haven	A
Thetford	A2
Thorpe Bay	A
Thurrock U.D.C. Area	A
,, North of, to Billericay	A
Tilbury	A
Todmorden	A
Tonbridge	A1
Torquay	A1
Totnes	A1
Trowbridge	A2
Tunbridge Wells	A1
Tynemouth C.B.	A
Uppingham (Salop)	A1
Uttoxeter U.D.	A2
Wakefield	A
Wallsend B.	A
Walsall C.B.	A
Walsden	A
Walton-on-Naze	A1
Ware	A
Warminster	A2
Warrington	A
Warwick M.B.	A
Wellington U.D.	A
Wells (Norfolk)	A2
Welwyn	A
Welwyn Gar. City	A
West Bromwich C.B.	A
Westbury	A2
Westcliff-on-Sea	A
Westerham	A1
Weston-super-Mare	A1
Weybridge	A
Weymouth	A1
Whitby U.D.	A1
Whitstable and District	A2
Wickford	A
Widnes	A
Wigan	A
Wigton	A2
Willington	A
Wilmslow	A
Wilts. County of	‡A2
Winchester	A1
Windermere	A2
Windsor and Eton	A
Wisbech	A2
Witham	A1
Woking (District)	A1
Wokingham	A2
Wolverhampton C.B.	A
Woodbridge	A2
Worcester C.B.	A
Workington	A
Worksop M.B.	A
Worthing	A2
Wrexham (incl. Cefn)	A
Wroughton	A1
Wylam	A
Wymondham	A2
York	A

For Birkenhead, Liverpool and London the rates are:—Craftsmen, 3s. 10½d.; Labourers, 3s. 5d. In the case of London the rate beyond the 12-mile radius is:—Craftsmen, 3s. 10d.; Labourers, 3s. 4½d. † Plus 2d. per working day. ‡ This is the County rate and applies except where higher grades are stated.

NOTE.—Carpenters and Joiners providing own tools when employed in establishments operating under the Supplementary Rules for Woodworking Factories and Shops, receive 2d. per day; when employed on other building industry work, 4d. per day.

WOMEN'S RATES.—In all districts throughout the country the rate of wages for women engaged in craft processes is 2s. 10½d. per hour. Women engaged on work other than craft processes, 2s. 6½d. per hour. These rates took effect on January 3.

For Building Trade Wages in Scotland see page 156.

BUILDING WAGES

New Rates Agreed by National Joint Council

THE National Joint Council for the Building Industry, at its statutory meeting held in London on January 13, carried out the customary annual review of the building wages, and agreed that, in accordance with the Sliding Scale Agreement based on the Retail Prices Index, an increase of ½d. per hour for labourers and craftsmen becomes due and will operate from February 7 next.

Consideration of an application by the operatives for a general wage increase of 4d. per hour and of a counter notice by the employers requiring a widening of the hourly margin (at present 5½d.) by which labourers' rates are below the standard rates of craftsmen was adjourned after the hearing of evidence from both sides. These matters and also an employers' application on public holidays are being examined meantime by an *ad hoc* committee.

Other applications, including those relating to the elimination of the Outer London rate, an increase of 2d. per hour in the rates of extra payment for discomfort, inconvenience and risk, an increase of 1d. per hour in the rate of qualified tubular scaffolders, the elimination of a qualifying period for the extra payment when men are handling dry cement, and a change in the travelling allowances in Manchester were referred to standing committees of the National Joint Council.

In respect of applications from craft unions relating to tool allowances, no agreement was reached, and deadlock procedure has been invoked by the plasterers' and plumbers' unions. Under this procedure a special joint committee has been appointed to report within one month.

Following is the full text of the wage agreement:

THE National Joint Council for the Building Industry, at its statutory meeting on January 13, reviewed, in accordance with the provisions of Rule 11 (b) (i) of its constitution, the wages payments for the time being in force under the National Joint Agreement.

The Council found that the average of the retail prices index figures, published by the Ministry of Labour during the months January to December, 1954, was 142 3/12ths. In the sliding scale this figure corresponds to a Grade A standard rate of 3s. 9½d. The existing rate is 3s. 9d. Therefore an adjustment is due of ½d. per hour increase, and the Council has authorised the publication of its consequent decision. As the result, the following new standard rates set out hereunder apply as from Monday, February 7, next (Table 1):

2. *Apprentices and young male labourers.* It is to be noted that this increase in the standard rates of wages will require consequential adjustments in the rates of wages of (i) Apprentices, (ii) Young male labourers.

Under the respective agreements the rates for apprentices are a prescribed percentage of the craft rate, and those of young male labourers are a prescribed proportion of the labourers' rate. The new rates of wages are set out in Tables 2 and 3.

3. *Watchmen.* Under National Working Rule 1 (f), the remuneration of watchmen employed in the building industry is fixed on the basis of a rate per shift to be determined annually at the statutory meeting of the council in accordance with the average of the retail prices index figures published during the antecedent 12 months, and the general principles of Rule 11 (b). The average figure of 142 3/12ths for 1954 corresponds to a rate per shift of, for London and Liverpool, 21s. 3d., Provinces, 20s., which rates are therefore due to operate with effect as from Monday, February 7.

4. *Female operatives.* The rates of wages of women aged 19 and over, engaged on craft processes, are fixed under National Working Rule 1 (l) at 10½d. per hour below the Grade A Standard Craft Rate. This rate is subject to the same adjustment as may be made by the Council from time to time in the Grade A Standard Rate for craftsmen. The new standard rate for women, and the corresponding rates for women engaged on other than craft processes, probationers (19 or over) and girls and young women under 19, which operate from February 7, are as follows:—

	Rate per hr.
i. Standard rate for women aged 19 and over engaged on craft processes	s. d. 2 11
ii. Corresponding rate for women engaged on work other than craft processes ...	2 7
iii. Probationers (19 or over) on craft processes (period of probation—six months):	
First month ... ... } Second month ... ... }	2 7
Third month ... ... } Fourth month ... ... }	2 8
Fifth month ... ... } Sixth month ... ... }	2 9
iv. *Girls and young women under* 19:	
Aged 15 (33⅓% of Women's Standard Rate)	11½
16 (45% of Women's Standard Rate)	1 3½
17 (66⅔% of Women's Standard Rate)	1 11½
18 (80% of Women's Standard Rate)	2 4

TABLE 1: NEW RATES (per hour)
(As from Monday, February, 7, 1955.)

1. *Craftsmen and Labourers.*

	London		Grade				Liverpool
	Inner	Outer	A	A1	A2	A3	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Craftsmen	3 11	3 10½	3 9½	3 9	3 8½	3 8	3 11
Labourers	3 5½	3 5	3 4	3 3½	3 3	3 2½	3 5½

TABLE 2: APPRENTICES

Age	Per cent. of Craftsmen's Rate	London		Grade				Liverpool
		Inner	Outer	A	A1	A2	A3	
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
15	25	11⅜	11⅜	11½	11½	11	11	11⅜
16	33½	1 3⅜	1 3⅜	1 3½	1 3	1 3	1 2⅝	1 3⅜
17	50	1 11½	1 11½	1 10½	1 10½	1 10	1 10	1 11½
18	62½	2 5⅝	2 5⅝	2 4½	2 4½	2 4	2 3½	2 5⅝
19	75	2 11½	2 11	2 10½	2 9⅜	2 9½	2 9	2 11½
20	87½	3 5⅛	3 4⅜	3 4	3 3½	3 3	3 2½	3 5⅛

TABLE 3: YOUNG MALE LABOURERS

Age	Per cent. of Labourers Rate	London		Grade				Liverpool
		Inner	Outer	A	A1	A2	A3	
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
15	33⅓	1 2	1 1½	1 1½	1 1	1 1	1 1	1 2
16	45	1 6½	1 6½	1 6	1 6	1 5⅝	1 5½	1 6½
17	66⅔	2 3⅜	2 3½	2 2½	2 2½	2 2	2 1½	2 3⅜
18	100	3 5½	3 5	3 4	3 3½	3 3	3 2½	3 5½

WAGES AND PRODUCTION

Sir Harry Selley's Comments

SPEAKING at the annual dinner of the Sheffield branch of the Federation of Master Builders, on January 18, SIR HARRY R. SELLEY, JP, the National President, said that 1955 could prove a boom year for building if there was increasing co-operation between employers and employed. Last week the building workers had been granted an increase under the sliding scale of ½d. an hour. There was nothing alarming in this, but we were also faced with an application from more than a million workers for a general wages increase of 4d. an hour which, if granted, would add £40 million a year to the industry's wages bill. The effect would be to send up costs at a period when it is vitally important to reduce building costs.

"All this (said Sir Harry) means that what promises to be a boom year in building could develop into something quite the reverse if there is not a more realistic approach to the wages problem by the workers engaged in the industry. The immediate need is for common sense, plus a sense of responsibility, and workers on the sites must realise that recurring, and often irresponsible increased wages demands are a danger to themselves, the industry, and the nation as a whole."

LIGHTING MAINTENANCE

Economic Considerations

THE maintenance of lighting installations was discussed by MR. W. ROBINSON, BSc, AMIEE, and DR. J. W. STRANGE, ARCS, in a paper given at the meeting of the Illuminating Engineering Society on December 14. The paper considered lighting maintenance with particular reference to the economics of, and procedure for, lamp replacement and to the factors affecting depreciation of lighting fittings.

Where the cost of replacing lamps individually is high there is often an economic case for replacing all the lamps over an area at one time. This can be justified on a cost basis when the saving in replacement cost per lamp by group replacement is greater than the residual value of the lamp. A further economic gain is achieved when group replacement can be made to coincide with scheduled cleaning of fittings.

It has been shown that ventilation decisively improves the self-cleaning properties of open reflectors, and that this effect applies equally well whether the lamps used are fluorescent, discharge or tungsten filament.

NEWS IN BRIEF

HISTORIC BUILDINGS CHAIRMAN

The Minister of Works has appointed Lt.-Col. Sir Grismond Philipps, CVO, JP, to succeed the late Captain Geoffrey Crawshay as chairman of the Historic Buildings Council for Wales.

IBICC CHAIRMAN

Mr. N. W. Kay has been elected chairman of the council of the Incorporated British Institute of Certified Carpenters for 1955. He will also continue as chairman of the IBICC examinations board, a post he has held for some years.

AUSTRALIAN BUILDING INDUSTRY

A statistical review published in Canberra recently, states that the Australian building industry expanded at the rate of more than 3,000 men in each of the first three quarters of 1954. The total at the end of last September was 111,300 (not counting people working on owner-built houses).

TRADE MISSION TO EGYPT

The Trade Mission which is to tour Egypt, the Sudan and Ethiopia under the leadership of Sir Edward Benthall and Mr. G. C. R. Eley will leave London on January 29, by BOAC for Cairo. Among the nine other members of the mission are Mr. Maurice Laing, managing director, John Laing and Son, Ltd., and Mr. T. A. L. Paton, Partner, Sir Alexander Gibb and Partners.

A NEW YEAR HONOUR

The name of Mr. B. A. Williams features in the New Year Honours List. He is awarded the CBE. Mr. Williams, founder and chairman of Williams and Williams, is a man of many and varied interests. A youthful 67, he not only plays a vigorous part in his company's affairs, but in addition, gives much time to his many public duties. The honour is in recognition of his highly successful work over many years for the National Savings movement.

OPEN DAYS

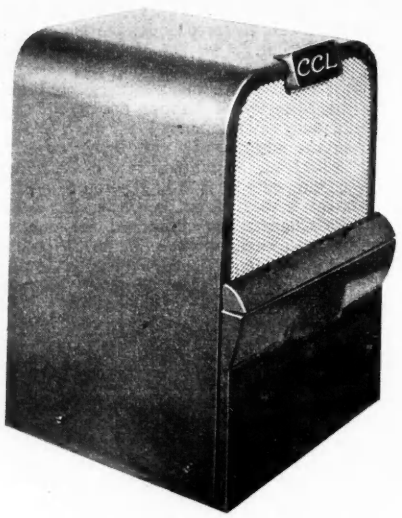
The Road Research Laboratory is to hold open days on May 12 and 13 at both the Materials and Construction Division, Harmondsworth, Middlesex, and the Traffic and Safety Division at Langley, Bucks. The Scottish branch of the laboratory at Thorntonhall, near Glasgow, will be open to visitors on June 2 and 3.

ELECTRICITY IN CHURCHES

"The Installation of Electricity in Churches," published by the Church Information Board, Church House, Westminster, SW1, contains revised recommendations and conditions together with the preliminary considerations, aims and objects desirable with such installations. Of particular note is the amusing poem, "Too Hard and Too Bright," by John Betjeman, and the drawings by John Piper illustrating How Not To Do It.

LOWER WINDOWS—HIGHER RENTS

Tenants of six houses belonging to Spalding (Lincs) Rural Council, at Donington, have asked the Council to lower the windows of the front rooms about nine inches, so that they can sit and look out. At a meeting on December 21, the Council decided to grant the request on condition that the tenants agreed to pay a rent increase of 6d. per week.



THIS AIR DRIER is now being marketed in the United Kingdom by Continental Components, Ltd., Hanover Buildings, 35-39, Maddox-street, W1, and is designed for the removal of moisture from enclosed spaces such as laundries, store rooms and workshops. Known as the "Moisture Master," it measures about 21 ins. high, 12 ins. wide and 20 ins. long, and is of one-piece steel construction with a baked-on "Dulux" finish. It has an area capacity of up to 10,000 cu. ft. enclosed space, can remove up to 20 imperial pints of water every 24 hours. Water, dust and pollen are removed from the air which, after drying, is reheated and passed back to the room. The unit is understood to be suitable for paint- and plaster-drying.

MALVERN HILLS CONTROVERSY

Conditions protecting the Malvern Hills —as laid down in the Town and Country Planning Acts of 1914 and 1947—are to be challenged in the High Court by the quarrying firm of Pyx Granite Co., Malvern, which in 1953 asked at a public inquiry for permission to quarry on the hills. Permission had been granted by the Minister of Housing under certain conditions. These restricted quarrying to 10 years and included clauses about the amount of dust allowed and confined blasting to certain times. Now the firm has served writs on the Minister of Housing and Worcestershire County Council, claiming that the Ministry's findings in 1953 were "of no effect." The firm's case is stated to be that the Planning Acts should not over-ride an earlier Act.

PERSONAL COLUMN

Sir Richard Ernest Yeabsley, CBE, FCA, FSAA, has been appointed director of the Ruberoid Company, Ltd.

Jenolite, Ltd., the anti-corrosion and metal pretreatment specialists of 13-17, Rathbone-street, London, W1, have announced the appointment of Mr. L. F. Parsons as technical sales representative, based on the London area.

THE ORGANISATION OF BUILDING FIRMS

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TRADE NEWS

STEEL FABRICATION

A revised edition of their catalogue is now being distributed to principals and chief executives in the industry by S. W. Farmer and Son, Ltd., Courthill-road, Lewisham, SE13. It provides useful and comprehensive data on their wide range of products, which include iron fire escapes, service and spiral staircases, structural steelwork, balustrading and ladders; and also supplements this with illustrations of work undertaken. A large number of pages present design methods and reference to those by-laws governing construction. The book is arranged for rapid reference with alphabetically indexed sections to enable the easy selection of required subjects.

SASH-HANGING SPECIFICATION

A brochure containing a specification for sash-hanging where their No. 644 rotating sleeve-bearing pulley is being used in conjunction with their improved sash chains can be obtained from Rhodes Chains, Ltd., Beacon House, 113, Kingsway, WC2.

SPEED REDUCERS

A catalogue now available from J. H. Fenner and Co., Ltd., V-Belt House, 54, Southwark Bridge-road, SE1, provides comprehensive technical information on the four sizes of torque-arm shaft-mounted speed reducers being produced by the company, and provides complete tables for the rapid selection of the appropriate reducer for the task.

FIRM'S GOLDEN JUBILEE

To mark the completion of 50 years of trading, Dussek Bitumen and Taroleum, Ltd., Empress Wharf, Bromley-by-Bow, E3, have issued a brochure illustrating their factories and range of products, as well as providing a detailed history of the firm's development.

CONSTRUCTION EQUIPMENT

Leaflets giving full particulars of their motor graders, concrete mixers, earth moving and construction equipment are being made available by Blaw Knox, Ltd., 94, Brompton-road, SW3.

OVERSEAS BUILDING

[*From Our Own Correspondents*]

The Argentine.—A factory is to be built in the Argentine for the manufacture of diesel engines for locomotives and electric generators. An agreement has been made between the State Transport Corpn. and Fiat. Marine diesel engines will be made at a later date. Details of the factory are not yet available as the project is at present in its infancy.

The Charles Pfizer Co. of New York and Brandt Laboratories of Argentine have concluded an agreement for the installation of a plant for the preparation of antibiotics, vitamins and hormones. The agreement involves the investment of $1½m. . . . It has been announced in the Argentine Press that the Gillette Co. of the USA is to erect a factory in the Argentine.

Agreement has been reached between the Sandhill Iron Works, a US concern, and a recently formed Argentine company, "La Papelera Tucumana," for the erection of a mill for the production of 100 tons of newsprint a day at Tucuman from sugar cane bagasse. The capital of the new company is 100m. pesos. . . . Work has now begun on the second hydro-electric plant on the Rio Atuel in Mendoza. The bulk of the work is to be undertaken by Siemens Bauunion. . . . A new factory is to be erected for the construction of commercial aircraft.

East Africa.—£60m. has been authorised by East African Railways and Harbours for expansion. Lines connecting Uganda, Tanganyika and Kenya are being lengthened and new stations are to be constructed. A number of station rebuilding projects are also being undertaken. Nakuru is to be remodelled at a cost of £½m. At Kilindini Harbour additional berths are being built to assist shipping at Mombasa. A causeway joining Mombasa Island with the mainland is being built and this will permit the building of further deep-water berths on the mainland and will open up a new area for industrial development. The railway architect is Mr. C. J. Crowe, LRIBA, PO Box 79, Nairobi, Kenya.

Greece.—An agreement has been signed between the Greek Government and the American firm EBASCO to the effect that this firm will present a survey of its views on the decision of the Public Power Corporation to build an 80,000-kw. power station at Ptolemais. . . . The Government Co-ordinating Council has agreed that the Piræus Port Organisation should carry out large-scale harbour works, costing about £2m., to be completed within three years. . . . The Netherlands firm Philips has made detailed proposals to the Greek Government for the establishment of a factory for the manufacture of radio sets and other electrical goods.

India.—A new dairy project is to be launched in the Kaira District of Anand in Bombay State, India, sponsored by the Kaira District Co-operative Milk Producers' Union. A number of buildings are envisaged in this scheme. Assistance is being provided by UN bodies and the Government of New Zealand. . . . The government has drawn up a housing plan for people of low-income groups in the state. The plan is based on a recent survey of housing shortages conducted by the Town Planning Department. It includes the construction of 14,874 houses in 51 districts. The houses will be let out either on rent or sold on hire purchase. The sites are at Lucknow, Kanpur, Agra, Allahabad and Banaras.

Two new dams have now been opened, one at Arjun and the other at Ahraura. These will provide irrigation facilities for 49,000 acres. . . . Industrial development plans are being organised for territories formerly belonging to France. Factories will be constructed in Pondicherry, Karikal, Yenam and Mahe under the Five Year Plan. The Planning Commission is to send experts to the areas concerned in the very near future. The plan in full was recently announced by the Minister of Planning, Mr. S. N. Misri.

News from the International Bank deals with a loan of $16,200,000 for thermal power projects at Trombay, near Bombay. Reconstruction and development plans are now being studied. . . . Boring work on the sea bed for the proposed lighthouse at Lushington Shoals 20 miles from Kandla, in the Gulf of Kutch, is expected to begin shortly. This follows completion of model studies for the proposed lighthouse and discussions between the Engineer-in-Chief of India's Lighthouse Department, Mr. S. K. Lahiri, and Professor Hellstrom, at the Royal Hydraulic Institute at Stockholm, Sweden. During his recent tour of several European countries, Mr. Lahiri interviewed lighthouse engineers in Sweden, the UK and France for the recruitment of engineers for speeding up the progress of the development plan for lighthouses under the Five Year Plan.

A 500-ft.-long bridge across the Damodar River on National Highway No. 6 between Calcutta and Bombay is to be built at Bagnan in Howrah district. The Government has sanctioned over 1,229,000 rupees for construction of the Damodar bridge, which will be a reinforced concrete structure. A bridge is already under construction across the river Dulong. Investigations are in progress for the construction of two bridges across the Rupnarain and Kosi rivers.

Kenya.—The Kenya European Hospital Association is planning extensions to the Nairobi European Hospital which are likely to cost £200,000. The extensions will accommodate an additional 100 patients and will necessitate the construction of a new block. The architect is Mrs. E. Dorothy Hughes, MBE, FRIBA, Lamberts Buildings, Delamere-avenue, Nairobi. . . . Work will begin within the next six months on a £½m. luxury hotel in Nairobi's City Square if the City Council approves the plans in hand. The architect is Mr. E. D. Hill, FRIBA, of Nairobi. It has been designed as a nine-storey building and it is estimated that it will take 2½ years to complete. . . . Hostels are being built for the Royal Technical College. In the initial stages there will be a men's hostel to accommodate 100 students, and a hostel for 48 women.

New Zealand.—The first full year of the national housing drive in New Zealand has been reviewed. The number of houses completed during the year showed a 13 per cent. increase over the previous best record, and building permits issued for dwellings were up by 25 per cent. The housing group scheme has now been firmly established, with 389 builders operating in 61 towns and 6,000 houses on the programme. . . . At the end of November last, 43 bridges, with a total length of 11,250 ft., were under construction on state highways and motorways. In addition to bridges already under construction, contracts had been let for 18 bridges totalling 4,320 ft.

Southern Rhodesia.—The airport at Salisbury, Southern Rhodesia, is expected to cost £1m. before it is completed. Already £450,000 has been spent and the airfield should be ready by March, 1956, according to the Federal Director of Civil Aviation. Tenders for the building of the terminal will be called for early this year. The project should take about 18 months to complete.

Substantial building programmes are intended for Ndola, Salisbury and other cities by the newly formed company registered as Rhodesia United Transport, Ltd. This company has been formed by United Transport Co., Ltd., and British Electric Traction Co., Ltd., whose assets alone exceed £32m. A seven-fold increase in the total land valuations and a threefold increase in building valuations is reflected in a recently completed revaluation of the city.

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BRIDGE METALWORK

* Tenders addressed to the Secretary, Department of Main Roads, NSW, Box 3903 GPO, Sydney, New South Wales, Australia, and suitably endorsed, will be received up to 2.15 p.m. on Tuesday, April 5, 1955, for the manufacture, supply and delivery of the metalwork for the construction of a steel and reinforced concrete highway bridge, 716 ft. long, over the Karuah River at Karuah in New South Wales, Australia (Contract No. 1).

Plans and specification may be seen and forms of tender obtained at the Office of the Agent General for New South Wales, 56-57, Strand, WC2. (Reference F.7940). Copies of half-size plans and specification can be purchased at the Department of Main Roads, 309 Castlereagh-street, Sydney, Australia, for the sum of 13 shillings and sixpence (Aust.), plus postage or air freight. Telephone inquiries to Chancery 4411, Ex. 738 or 771, quoting ref. ESB/845/55.

* From the Board of Trade Special Register Information Service.

The SCOTTISH BUILDER

University Club Premises

THE sale of the University Club premises at 127, Princes-street, Edinburgh, to the Capital and Counties Property Co., Ltd., has been confirmed. Plans for the conversion of the premises into shops and offices were approved at a recent sitting of the Dean of Guild Court. The work is estimated to cost about £55,000.

The plans show two shop fronts in a colonnade built out from the existing frontage of the building to the back line of the pavement and conforming to the character of adjacent shop fronts.

The street level frontage will be of natural stone and the existing first-floor bay window, one of the distinctive architectural features of the buildings, will be preserved.

RIBA Intermediate Design Prize

THE Royal Institute of British Architects announce that their annual Intermediate Design Prize has been awarded to Mr. Angus Ramage Gilmour (Edinburgh College of Art), of Eliot's Park, Peebles. He receives a certificate and £100 for the study of contemporary architecture in Europe for his design for "A Museum for Early Motor Cars in a Midland Town."

Department Store Developments

MAJOR STORE DEVELOPMENTS have been announced recently, involving sites on Princes-street, Edinburgh, and Argyle-street, Glasgow. The former Palace cinema and café in Princes-street is to be demolished to provide a site for a large departmental store for F. W. Woolworth, who have premises near by.

Marks and Spencer, Ltd., are also preparing a former cinema in Princes-street for use as a modern store, and Littlewoods have announced plans to reconstruct their Princes-street premises, which they have been operating as a department store.

In Glasgow, Littlewoods have closed down the Argyle-street section of the property which they acquired some years ago and which has been awaiting development since. The intention is to start work soon on a multi-storey block to make the fullest use of this site.

Granite Rubble Houses

IN an effort to complete Aberdeen's all-granite housing scheme at Kincorth, in the south-west of the city, at a cost which would be approved by the Department of Health, the corporation housing committee have decided to try a method of construction which, it was stated, would reduce the expenditure by £200 per house.

As an experiment it is proposed to build 18 houses in coursed granite rubble instead of in squared and dressed granite blocks, of which the 995 houses at present in the scheme have been built. The Department of Health recently expressed concern at the difference in the cost of building in granite and brick, stated to be about £400 per house.

Glasgow Housing Record

AT an aggregate cost of £10m., municipal house-building in Glasgow last year reached the record total of 6,460 houses completed for occupation. This is 750 more houses than in 1953, and an increase of 84 on the previous record—6,376 houses—set up in 1929.

The corporation have now built and completed 90,617 houses since 1920, and approximately 30 per cent. of the total number of dwellings in the city are municipally owned.

Building Plant Exhibition

A BUILDING PLANT EXHIBITION is projected for Glasgow at Queenslie Industrial Estate, from June 8-15 inclusive. The Ministry of Works is sponsoring the exhibition which will cover 160,000 sq. ft. and include working demonstrations of plant of most types, working under actual constructional conditions. The plan has the support of the various Scottish trade organisations. Manufacturers interested in showing are asked to make early application to the Ministry at 122, George-street, Edinburgh.

Bishopbriggs Housing Project

PERMISSION TO DEVELOP initially 54 acres of land to build 80 houses in the Balmuildy-road-Kirkintilloch-road area of Bishopbriggs was granted recently by Lanark County Council to George Wimpey and Co., Ltd., London. It is the beginning of what is regarded as one of Scotland's biggest private housing developments post-war which, if eventually pursued as the builders originally intended, will approximately double the population in the Bishopbriggs area.

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Macdougall & Son Ltd., Glasgow
National Flooring Co. Ltd.
N. Jack & Co., Newcastle
N. Wales Floorings
Sherwood Floors Ltd., Nottingham
South Western Flooring Co. Ltd., Totnes
Tegula Floors Ltd.
Walkers (Hove) Ltd.
Wecando (Lincoln)

SCOTTISH BUILDING TRADE WAGES

FOLLOWING are rates of wages authorised by the Scottish National Joint Council as from May 24, 1954. They apply to the whole of Scotland, including the islands of Orkney, Shetland, etc.

Grade A: Craftsmen, 3s. 9d.; Labourers, 3s. 3½d.

For apprentices, the rates are:

Year	Percentage of Craftsman's rate	For week of 44 hours. s. d.
1st	25	41 3
2nd	33½	55 0
3rd	50	82 6
4th	66⅔	110 0
5th	75	123 9

For female labour, the rates are:

	s.	d.
Operatives on craft operations (at end of probationary period)	3	3½
Operatives on labouring operations (at end of probationary period)	3	0

NEW BUILDINGS

Barnock.—Lanarkshire CC is having plans prepared for a new building at the Protestant School. The County A is William R. Watt (F), Education Offices, Albert-st., Motherwell-Wishaw.

Buteshire.—CC has appointed the British Reinforced Concrete & Engineering Co., Ltd., 144, St. Vincent-st., Glasgow, as reinforced concrete consultant engineers in connection with the erection of the new Academy for Rothesay.

Glasgow.—Plans are to be prepared for fire station at the Castlemilk housing site. Plans by the Architectural and Planning Dept., Municipal-bldgs., George-sq., Glasgow.

Glasgow.—Plans are to be prepared for fire station at the Knightswood housing development area. Plans by the Architectural and Planning Dept., Municipal-bldgs., George-sq., Glasgow.

Glasgow.—Corpn. has received the approval of the Scottish Dept. of Health for the development of the ground at Byars-rd. and Cresswell-st. for police houses, etc. The City A has been authorised to prepare sketch plans and estimates.

Glasgow.—Negotiations are proceeding between the corpn. and James Templeton & Co., Ltd., Templeton-st., Bridgeton, Glasgow, for the purchase of ground at Templeton-st. for the erection of large extension to Templeton's carpet factory.

Glasgow.—Plans are to be prepared for fire station at a Garthamlock housing site. Plans by the Architectural and Planning Dept., Municipal-bldgs., George-sq., Glasgow.

Glasgow.—It has been decided after negotiations between the corpn. and the Catholic Archdiocese of Glasgow that a new Catholic Church for Newlands will be build on corpn. ground at North Merrylees-rd.

Greenock.—Plans prepared and approved for three-storey block of flats at Inverkip-rd. and Stafford-st.; also scheme of houses to be erected at Stafford-rd. The architect is Robert L. Rankine, Master of Works Offices, Municipal-bldgs., Hamilton-st., Cathcart-sq., Greenock.

Lanarkshire.—Plans prepared and approved for the Forestry Commission of Scotland, 25, Drumshoughgdns., Edinburgh, for new garage and house at Camp Wood, on the Clydesdale estate. The architect is John Shirlaw (F), 36, Melville-st., Westend, Edinburgh.

Lanarkshire.—Plans prepared and approved for alterations and additions for the East Kilbride Co-op Soc., Ltd., at Main-st. The architect is Kenneth F. Masson (F), 119, Paisley-rd., Kinning Park, Glasgow.

Lanarkshire.—Plans prepared and approved for Sports, Ltd., Kirkintilloch-rd., Bishopbriggs, for new workshops, new storage buildings, etc., on selected site. The architects are Wilson, Hamilton & Wilson (F&F), 153, Oxford-st., Gorbals, Glasgow.

Lanarkshire.—Plans prepared and approved for Ronald Johnstone, Ltd., 52, Elvan-st., Motherwell-Wishaw, for new showrooms, conversion scheme, etc., at 28-30, Wellgate, Lanark. The architects are Cullen, Lochhead & Brown & Lockhart W. Hutson, 119, Cadzow-st., Hamilton West.

Lanarkshire.—Plans prepared and approved for petrol filling station, house, etc., at Tinto-hill, Thankerton. The architects are James Taylor Thomson, MacCrae & Sanders (F&A), 212, Bath-st., Glasgow.

Lanarkshire.—Plans prepared and approved for new offices for Russell & Co., Ltd., at the Whiteshaw Foundry, Carluke. The architect is James Shirlaw, 16, Market-rd., Carluke.

Lanarkshire.—Plans prepared and approved for primary school at Glen-ave., Strutherhill, Larkhall. The architect is William L. Watt (F), County Education Offices, Albert-st., Motherwell-Wishaw.

Strathavon.—Permission has been granted for the erection at Commercial-rd. of a new factory for Messrs. S. W. Gilmour, 4, Commercial-rd., Strathavon.

The Builder

FUTURE CONSTRUCTION

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

JANUARY 26.

***†Northumberland CC.**—Branch library, Forest Hall, Newcastle-upon-Tyne. County A, Newcastle-upon-Tyne. Dep. £2 2s.

***†Sedgefield RDC.**—Eight bungalows, 78 houses and four garages, Chilton. Buildings and 44 houses and 11 garages, Trimdon Village. R. P. Burton, Clerk. Dep. £2 2s.

JANUARY 28.

***†Northampton BC.**—27 flats and maisonettes and 54 dwellings, Eastfield. Boro' A. Dep. £2 2s. each. Tenders by February 19.

***†Worcestershire CC.**—Secondary school, Bromsgrove. Yorke, Rosenberg & Mardall, architects, 2, Hyde Park-pl., London, W2. Dep. £2 2s.

JANUARY 29.

***Bromsgrove UDC.**— 60 flats and 12 flats and maisonettes, Charford housing estate. E&S. Dep. £3 3s.

***†Caernarvonshire EC.**—Technical College, Bangor. M. Williams, Director of Education, Caernarvon. Dep. £2 2s.

***†Doncaster CBC.**—Phases 1 and 2 Technical College for Further Education. Boro' A, 15, South-parade. Dep. £5 5s.

***†Essex CC.**—Dining-hall and adaptations, Laindon St. Nicholas-la. County Primary School. H. Conolly (F), County A, Chelmsford.

FEBRUARY 1.

***Bucks CC.**—Two secondary modern schools, one Great Missenden and one at Stokenchurch. Clerk, Aylesbury.

***†Northamptonshire Standing Jt. Com.**—Police houses, Brackley, and/or two pairs at Towcester. J. Alan Turner, Clerk, County Hall, Northampton.

FEBRUARY 2.

***†Northampton Grammar (Town and County) School Jt. EC.**—Extensions to school. G. E. Churchill, H. A. Skerrett, joint clerks.

FEBRUARY 4.

***†Lambeth BC.**—200 flats and maisonettes, Opal-st. H. Moncrieff (F), Co-op. Planning, Ltd., 73b, South Side, Clapham Common, SW4.

FEBRUARY 7.

***†Cornwall CC.**—Secondary school, Trescobeas, Falmouth. Lyon, Israel & Ellis (A&A), 26, Seymour-st., W1. Dep. £5 5s. Tenders by March 7.

FEBRUARY 10.

***Bournemouth CBC.**—Conversion, 10, Wellington-rd., into day nursery. Boro' A. Dep. £2 2s.

FEBRUARY 11.

***Grantham BC.**—46 houses, Belton-la BE&S. Dep. £2 2s.

***Salford City C.**—48 flats and three houses, Moss Meadow. City E. Dep. £3 3s.

***Sunderland CBC.**—Extension to Villette-rd. school clinic. Boro' A, Grange House, Stockton-rd. Dep. £2 2s.

***West Riding CC.**—Alterations and additions, fire station, Wakefield-rd., Hemsworth. County A, "Bishopgarth." Westfield-rd., Wakefield. Dep. £2 2s.

FEBRUARY 14.

Ellesmere Port UDC.—102 houses. E&S. Dep. £3 3s.

***Huntingdonshire CC.**—Extensions, Ramsey Abbey Grammar School. County A, Huntingdon.

Sutton-in-Ashfield UDC.—Carsic-la. housing scheme, ext. No. 5. E&S. Dep. £2 2s.

***Wallasey CBC.**—Dining-room and scullery, Riverside School. Boro' A.

FEBRUARY 15.

***Rangoon.**—Head office building for Union Bank of Burma. General manager, Sule Pagoda-rd., Rangoon.

FEBRUARY 16.

***Wallasey CBC.**—Shelters, Leasowe Common. Boro' A.

FEBRUARY 17.

***Harrow BC.**—Dressing accommodation and public convenience, The Croft Open Space, Pinner. J. H. Melville Richards, BE&S, 48, Uxbridge-rd., Stanmore. Dep. £2.

FEBRUARY 21.

Cheshunt UDC.—16 single-unit dwellings at Brookfield-la. G. S. Newnham, Clerk of C. Dep. £2.

***Stepney BC.**—Superstructure of block of 30 flats, Lance-st. site, Limehouse. BE&S. Dep. £10 10s.

FEBRUARY 22.

***Arnold UDC.**—Pavilion, King George's Field, Gedling-rd. J. Dudding & Ptnrs., architects, 30, Clarendon-st., Nottingham.

Preston CBC.—Ribbleton Hall County Sec. Sch. BE&S. Dep. £3 3s.

FEBRUARY 24.

***Huddersfield CBC.**—School, Deighton. Boro' A, High Street-bldgs. Dep. £2 2s.

MARCH 1.

***Doncaster CBC.**—Technical High Sch. for Boys, Armthorpe-rd. Boro' A, 15, South-par. Dep. £3 3s.

MARCH 4.

***Huntingdonshire CC.**—Secondary modern school, St. Peters Hill, Huntingdon. S. M. Holloway (A), County A, Huntingdon. Dep. £2 2s

MARCH 5.

***Eton RDC.**—18 dwellings, Moreland-ave., Colnbrook. Clerk, Windsor-rd., Slough. Dep. £2 2s.

NO DATE.

***Croydon CBC.**—13 houses, Spa-hill, and 13 Beauchamp-rd. BE.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

JANUARY 31.

***†Durham CC.**—Remodelling work, Durham Whinney Hill modern schools; renewal of floors, Helmington Row county school and Sacriston (aided) school. G. R. Clayton (F), County A, Durham.

FEBRUARY 1.

***Bristol City C.**—Installation of heating, etc., Monks Park Sec. Sch., Horfield. City A. Dep. £2 2s.

FEBRUARY 3.

St. Marylebone BC.—TC. (Materials.)

FEBRUARY 4.

***Chester-le-Street RDC.**—Sub-contract work to 89 houses, Scorer's-la., Lumley. F. Bowman (A), Estate Office, Great North-rd., Birtley.

FEBRUARY 7.

***Epsom and Ewell BC.**—Reconstruction of part of swimming pool lining wall at Municipal Baths. BE&S. Dep. £2 2s.

Gosport BC.—BE. (Materials.)

Manchester City C.—City S. (Materials.)

Stoke-on-Trent City C.—City S. (Materials.)

Warrington CBC.—BE&S. (Materials.)

Watford BC.—BE. (Materials.)

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FEBRUARY 11.

***Chingford BC.**—Supply of paint. BE&S.

***Edmonton BC.**—Materials and sub-contracts for housing schemes. H. Backhouse, TC.

Stamford BC.—BE&S. (Materials.)

FEBRUARY 21.

***Reading CBC.**—Improvements to sanitary accommodation, Redlands School, Lydford-rd. Eric G. V. Hives (L), 3, Cork-st. Dep. £2 2s.

Whitchurch UDC.—E&S. (Materials.)

FEBRUARY 24.

Turton UDC.—E&S. (Materials.)

ROADS, SEWERAGE AND WATER WORKS

FEBRUARY 1.

***Hayes and Harlington UDC.**—Tarpaving, etc., at various schools. E&S.

FEBRUARY 4.

Letchworth UDC.—Roads and sewers, Grange estate, stage V. E&S. Dep £2 2s.

FEBRUARY 5.

Bristol City and County C.—Footpaths, Hanteliffe housing site, 3rd section. City E. Dep. £2 2s.

FEBRUARY 7.

Gillingham BC.—Site preparation works at Maidstone-rd. site, stage 2. BE. Dep. £3 3s.

Guildford, Godalming and Dist. WB.—6-in. dia. main, Huntwood to Sutton Abinger. Chief E. Dep. £2 2s.

Keighley BC.—Holme Wood-rd. private street works; Mannville-st. (part of) private street works; and Mannville-way private street works. BE.

FEBRUARY 10.

Benfleet UDC.—Roads and surface water sewers, Parkfields housing estate (area 1). E&S. Dep. £2.

FEBRUARY 12.

Holywell UDC.—Water supply works at Greenfield. Williams and Clarke, engineers, 6, Godstall-chbrs., Chester. Dep. £3 3s.

FEBRUARY 14.

Carmarthen RDC.—Llawddog water scheme, contract No. 6, pumping station buildings. Herbert Lapworth & Ptnrs., 25, Victoria-st., SW1. Dep. £5.

FEBRUARY 15.

Ashby-de-la-Zouch RDC.—About 1,400 yds. sewers, etc., at Measham. Pick, Everard, Keay and Gimson, engineers, 6, Millstone-la., Leicester. Dep. £2 2s.

Valley RDC.—Sewerage and sewage disposal works at West Anglesey (work No. 1, Aberffraw; work No. 2 at Bryndu). Richards and Dumbleton, civil engineers, 45, Newhall-st., Birmingham, 3. Dep. £3 3s. each contract.

FEBRUARY 18.

Portsmouth City C.—Making-up of footway on Eastern-rd. CPO No. 1, stage 2. City E. Dep. £2.

FEBRUARY 21.

Royal Leamington Spa BC.—Water supply, contract No. 1, Campian Hills service reservoir. Sir Herbert Humphries and McDonald, Consulting Engineers, Park-chbrs., 276, Monument-rd., Edgbaston, Birmingham, 16. Dep. £5.

MARCH 7.

Armagh and Dungarron Waterworks Jt. Bd.—Construction of Seagahan reservoir, near City of Armagh. Munce and Kennedy, engineers, 133, University-st., Belfast. Dep. 20 guineas.

APRIL 30.

Government of Iraq (Dev. Bd. and Min. of Development).—Highway bridge over river Tigris at Amara. Sir Bruce White, Wolfe Barry & Ptnrs., 1, Lygon-pl., Grosvenor-gdns., SW1. Dep. £25.

GENERAL BUILDING WORK (LONDON)

Hendon.—OLD PEOPLE'S HOME.—TC recommended to approve sketch proposals for the adaptation of Nos. 154 to 158, Station-rd. to provide accommodation for 30 old people and a caretaker, estimated cost £12,800; also the erection of 20 flats.

Holborn.—OFFICES.—A new office building of 70,000 sq. ft. (half already let to the Midland Bank, Ltd.) is to be built in Holborn after the demolition of premises formerly occupied by James Buchanan & Co., Ltd. The site is at Nos. 24 to 31, Holborn, and Nos. 75 to 81, Fetter-la. Demolition of the existing premises is to begin at once, and the new development will be undertaken by Holborn Circus Land Investments, Ltd. The new building, designed by Yates, Cook and Darbyshire, architects, 43, Gt. Marlborough-st., Regent-st., W1, will have a frontage of more than 120 ft. in Holborn.

Kensington.—OLD FOLK'S HOME.—Plans being prepared by George Fairweather & Ptnrs., FRIBA, 28, Wigmore-st., W1, for a home for old folks by the conversion of a mansion house in Holland Park. LCC is the authority for this £20,000 project and tenders will be invited shortly.

Orpington.—SCHOOL.—A four-form entry school to be built at Orpington by Kent County Council is being designed by Eric Rheinberg working in co-operation with George Fairweather and Geoffrey Cannon as Geo. Fairweather & Ptnrs. at 28, Wigmore-st., W1. The school will be built in two phases.

each phase costing £100,000, and tenders will be invited this year. The area of the school, including all floors, will be 43,822 sq. ft.

Regents Park.—BBC HEADQUARTERS.—Preliminary plans are being prepared by Fitzroy Robinson, FRIBA, 3, Verulam-bldgs., Gray's Inn, WC1, for the erection of the British Broadcasting Corporation's proposed new headquarters on a site adjoining the existing Broadcasting House at Portland-pl., W1. The scheme is being financed by the Prudential Assurance Co., Holborn Bars, EC1, and Sir Howard Robertson, FRIBA, 53, Bedford-sq., WC1, is the consulting architect. The estimated cost of the project will be about £2m., and work on the building is expected to start in the spring.

Southwark.—MULTI-STOREY OFFICES.—No objection in principle has been made by Works Com. to proposals by Wates, Ltd., 1258-1260, London-rd., Norbury, SW16, for the erection of a seven-storey office building on corner of Lancaster-st. and Newington Causeway, as an addition to No. 68, Newington Causeway.

Southwark. — EXTENSIONS. — Extensive structural alterations and additions at Nos. 3-15, Stamford-st., Wakefield House, Rennie-st., and Nos. 18 and 23, Blackfriars-rd. have been proposed by J. Sainsbury, Ltd., Stamford House, Stamford-st., SE1, and approval in principle has been given by Works Com.

Southwark.—OFFICES.—The erection of a building at the corner of Sumner-st. and Emerson-st. for offices, printing, storage, etc., has been proposed by Smith and Young, Ltd., as an extension to their present works at Nos. 4-6, Emerson-st., and approval has been given by Works Com.

Southwark.—SERVICE STATION.—TP approval has been given to proposals by J. Bolland, 25, Kensington Mansions, SW5, for the erection of a motor vehicle service station, including workshop, showroom and office, on the site of Nos. 32-40, Manor-pl. and 113-123, Crampton-st.

Southwark.—FACTORY.—No objection has been made by Works Com. to proposals for the erection of a factory for the manufacture of furniture on the site of Nos. 1-9, Comus-pl. and 1-11, Townsend-st. submitted by F. Boreham, Son and Wallace, Victoria House, Southampton-row, WC1, on behalf of H. J. Searles & Co., Ltd.

Southwark.—WAREHOUSE EXTENSION.—The erection of a warehouse extension to existing commercial buildings on the corner of Great Guildford-st. and America-st. has been given TP consent. The proposals were made by Selecta, Ltd., 1, Brixton-rd., SW9.

Wanstead.—APPOINTMENT.—TC are recommended to approve the appointment of Tooley and Foster, Midland Bank-chbrs., Buckhurst Hill, as architects for the conversion of No. 45, Hollybush Hill; development of the Vicarage-rd. site; the conversion of Nos. 27-29, Woodford-rd.; and the development of the Cross-rd. site. The QS for the last scheme are Thurgood, Son, and Chidgey, 4, Broad-st. Buildings, EC2.

(PROVINCIAL)

Alnwick.—UDC provisionally approved plans by Surveyor, G. Beaty, for erection of 66 houses on Greensfield-ave. estate.

Belper.—RDC received allocation of 30 houses for 1955. Approved layout for 72 houses at Duffield site; 40 at Leabridge, Holloway.

Blackpool.—Eclipse Printing Co., Queens-st., propose new works at Clyde-st. Architects, Fairbrother, Hall and Hedges, 2, Birley-st.

Blyth.—TC to build nine houses on land east of Maple-cres. estate. D. W. Foster, BE.

Bolton.—BC approved plans for erection of 22 bungalows at Moss Bank-way, Johnson Field estate, and aged persons' dwellings at Chorley New-rd.

Boston.—TC to advertise for tenders for erection of 100 houses during 1955.

Brierfield.—UDC seek Min. approval for new factory on Meadow Bank site.

Cardiff.—Construction of Cardiff Corpn's proposed new £332,000 swimming baths on north side Wood-st., named the Wales Empire Pool, approved in principle by MH&LG.

Carlisle.—TC propose erection of new Town Hall. Private architects to be appointed.

Cheadle and Gatley.—UDC to erect new Public Hall at Heald Green.

Chester.—RDC received allocation of 50 houses for 1955.

Clowne.—RDC received allocation of 54 houses for 1955, comprising 30 traditional and 24 new traditional.

Cockermouth.—RDC propose 18 houses at Oughterside and 68 on Broughton Moor Brickworks site.

Coventry.—TC approved draft layout for 6 houses, 20 maisonettes, 12 flats and 2 aged persons' dwellings at Gilbert-st. No. 1 site. To invite tenders for new fire station at Fletchamstead Highway. Approved erection of new nursery unit at Aldermoor Farm Sch. Approved scheme for erection of 11 shops at Stoke Aldermoor Neighbourhood Unit.

Coventry.—Large private housing scheme expected to begin at Allesley this year. It is planned to build 2,000 dwellings of various types on 150 acres of land. Scheme will take four years to complete; negotiations completed for transfer of land.

Darlington.—TC received sanction to borrow £23,200 for ten houses in Springfield, and £12,924 for flats and garages on Nickstream site. Sanction sought for loan £26,555 for adaptations and furnishings at Hollyhurst, Woodlands-rd.

Darlington.—EC approved expenditure £84,000 on laboratories and engineering equipment as first stage new College for FE. It is hoped to start building in the spring. Plans by Boro' A.

Darlington.—TC to buy Blackwell Grange estate for £37,320, and proposals include new museum and art gallery, and additions to South Park. BE, G. S. Short.

Daventry.—RDC propose erection of 20 houses at Crick; 8 houses and 8 bungalows at Long Buckby and 6 houses and 8 bungalows at Weedon in 1955 programme.

Dudley.—EC to invite tenders from selected contractors for erection of Wolverhampton-st. Sec. Mod. Sch.—Propose following in 1955 programme: library at Dudley Gram. Sch.; additional classrooms at Blowers Green Jun. and Infs. Sch.—BC to invite tenders for final stage of new bus station.

Durham.—City C to let contract for erection of blind persons' hostel at Durham City. Plans by County A, G. R. Clayton, Court-la.

Durham.—J. P. Chaplin, ARIBA, 4, The Close, Norwich, preparing layout and sketch plans for proposed crematorium for City C and adjoining local authorities.

Durham.—CC propose to convert Johnston Grammar Sch., Durham, into offices for County A. Dept. Plans by County A, G. R. Clayton.

Eccles.—BC to negotiate contract for erection of further 145 dwellings with Bower Moffatt & Co., Ltd., Manchester. Approved plans:—Erection of compressor house on south side factory at Monton Fields-rd. for Edward Taylor, Ltd. Plans submitted by S. Ash, 31, Monton Fields-rd.; workshop and offices abutting on Oak-st. at Nassau Mill premises, Cawdor-st. for Glass-to-Metal Sealing Co., Ltd., Vine-st. Plans submitted by A. Dempsey, 2, Ellesmere-rd.

Fleetwood.—Boro' E to prepare plans for erection of Marine Pavilion. £55,000 est.—TC to invite tenders for erection of 50 houses on West View estate.

Golborne.—UDC to erect 40 houses on Laburnum-rd. estate in 1955.

Guisborough.—UDC seek loan sanction for £82,350 for erection of 56 houses at Lazenby.

Hebburn-on-Tyne.—UDC has long-term plans for creation of shopping centre in Station-rd. area, cost about £300,000. Provision to be made for about 40 shops. Surveyor, R. C. Bestow.

Hexham.—Abbey House to be converted into child welfare and maternity clinic. Plans by County A, County Hall, Newcastle.

Huddersfield.—TC received Min. approval for erection of crematorium, £89,000 est.

Irthlingborough.—UDC approved layout for 42 dwellings in Park-st. area, and 24 houses and 6 bungalows at Addlington-rd. estate.

Kidderminster.—TC received Min. approval for erection of Cattle Market.

Liverpool.—TC seek approval for erection of Fire Station at Speke. To prepare plans for erection of branch library at Allerton. To invite tenders for erection of four-storey maisonettes at Brownlow Hill. Approved erection of 25 dwellings at New Henderson-st., and 21 flats at Embleton-st.—Approved plans for erection of Our Lady of the Seven Sorrows Church at Stopgate-la. for Rev. H. Pownall. Architects, H. S. Goodhart, Rendell & Ptnrs., 13, Crawford-st., W1.—Reg. Hosp. Brd. appointed H. W. Langdon and Every, 16, Hackins Hey, Liverpool, as QS for adaptations to Hesketh Park Hydro. Propose following in 1955/6 programme:—Provision of X-ray department at Warrington Gen. Hosp.; erection of maternity block at Walton Hosp. and extensions at Ormskirk Cty. Mental Hosp.—W. T. Harrison, Knowsley-bldgs., Tithebarn-st., architect for erection of new office and workshop at 37/41, Duke-st., for L. Sterne.

Manchester.—TC propose erection of following houses in overspill scheme:—1,000 at Partington; 250 at Stalybridge, 250 at Longdendale, 430 at Hazel Grove and Bramhall, 245 at Bredbury and Romiley and 240 at Cheadle.—I. J. & G. Cooper, Ltd., Sevendale House, Dale-st., Lever-st., Spear-st. and Stevenson-sq., Manchester, 1, propose flooring over light wells to warehouse and offices. Architects, J. W. Beaumont & Sons, 53, Spring-gdns.—Permoglaze, Ltd., propose erection of wholesale paint distributing warehouse and offices at 17, Great Ducie-st., Strangeways. Architects, Francis Jones & Son, 178, Oxford-rd., Manchester.—Rev. Mother Superior proposes erection of three-storey classroom block, single-storey science block, covered way and cycle store at Loreto College, Upper Moss-la., Hulme. Architects, Reynolds and Scott, 9, Albert-sq., Manchester.—Geigy Pharmaceutical Laboratories, Ltd., Rhodes, Middleton, propose erection of factory, offices and laboratories at Floats-rd. and Shady-la., Roundthorne Industrial Area, Wythenshawe. Architect, Benjamin Waterhouse, 134, Deansgate, Manchester.

Manchester.—Hsg. Com. agreed to inclusion of eight-storey block of maisonettes in £1,043,850 plan for redevelopment of St. George's, Hulme, clearance area.

Morpeth.—TC to build six bungalows in Spelvit-la. Plans by S. F. H. Perkins.

Newburn (Northumberland).—J. Tulip & Son, Lemington, to appeal against refusal of Cty. Plan. Com. to allow construction of petrol filling station on West-rd., Walbottle.

Newcastle-on-Tyne.—Trustees of RC Diocese of Hexham and Newcastle contacted City C for purchase of site at Kenton North for proposed church.

Newcastle-on-Tyne.—Hsg. Com. approved plans for two old people's dwellings on West Denton estate and 17 houses on Montague estate, total cost over £57,300. Plans by City A, G. Kenyon.—City C. approved site on Town Moor for building of new St. Mary Magdalene Hosp. Plans by City A.—Newcastle Breweries, Ltd., Haymarket, acquired site for the erection of bottling factory, and propose to purchase more land for erection of new offices. Plans by company's architect, J. Coates.—Reg. Hosp. Brd., Osborne-rd., to spend £409,364 on new building and engineerings this year.—Plans by R. Burke, 10, Lambton-rd., approved for new two-form primary RC sch. on Kenton North estate.—Newcastle-on-Tyne Co-op. Society propose to build shops and warehouses in West-rd. and Broadwood-rd. Plans by Society's Building Dept., Claremont-rd.—Pig slaughter establishment to be built in Pottery-la. by Bacon and Curing Co. Plans by S. W. Gell, 14, West Smithfield, London, EC1.—Gill and Nicolson, Blandford-st., to build warehouse in Blandford-st. Plans by C. Solomon, St. Mary's-pl.—Oxford Cars (Newcastle), Oxford-st., to build showrooms. Architects, A. H. Fennell & Co., Bridge End-chbrs., Chester-le-Street, Durham.—A. S. Waring, 36, Jesmond-rd., architects for ten houses and nine garages in Ridgeway-rd. for W. H. Oliver (Newcastle), Ltd.—Urban Development Co., 32, The Side, had plans approved for ten houses in Kingsway.

Northampton.—RDC propose 36 houses at Milton, 18 at Brafield, 18 at Roade, 20 at Kislingbury, 4 at Cogenhoe, 24 at Wootton and 20 at Hardingstone.—Northampton and District Hosp. Management Com. propose reconstruction of Kingsthorpe Block at St. Edmunds Hosp.; erection of recovery room for general theatres at Northampton Gen. Hosp.; construction of house for medical staff at Creaton Sanatorium; and extensions to mortuary at Danetre Hosp.

North Riding.—Contract to be let shortly by EC for erection of Cleveland day spec. sch., South Bank-on-Tees. School A, D. W. Dickenson, County Hall, Northallerton.

Northumberland.—Ed. Com. to seek sanction to build six schools at Ponteland, Haltwhistle, Morpeth, North Sunderland, Alnwick and Tweedmouth, cost between £400,000 and £600,000. Plans by County A, County Hall, Newcastle.

Northumberland.—Ed. Com. to build additional classrooms at Hexham County Gram. Sch. and at Blyth Sch. Plans by County A, County Hall, Newcastle.

Nottingham.—TC to sell property at Greyfriar Gate to Nottingham Co-op. Society, Ltd., who plan to demolish existing buildings and erect shop premises and offices.

Nuneaton.—TC to invite tenders for erection of 12 aged persons' bungalows at Tuttle Hill. Approved plans for canteen, laboratory and office block at Gipsy-la. for Sterling Metals, Ltd.

Ombersley.—Parish C approved proposed layout of houses to be built on site near Memorial Hall, submitted by R. F. Fry, Building S to Droitwich RDC. Site would take 105 houses.

Otley.—UDC propose erection of 150 houses during 1955. To invite tenders for 38 traditional houses on Section B of Western-la. estate; approved plans for new fitters' shop and store at Wharfeside Paper Mills for P. Garnett & Son, Ltd.; extensions to Albert Works, Otley, for William Sinclair & Sons. Architects, C. Holmes & Son, Otley.

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Rainford.—PC Council propose erection of Parish Hall (Vicar, Rev. Fielding Taylor).

Rawtenstall.—UDC received further allocation of 45 houses for erection in 1955 (total allocation now 100).

Salford.—TC approved alterations and improvements to Frederick-rd. Bus Depot, £119,000 est.

Scarborough.—Hsg. Com. to build during 1955-56: 120 houses at £150,000 and 50 slum clearance houses at £62,500.

Sedgley.—UDC considering tender from Wates, Ltd., London, for 74 houses and 16 flats at Stickley-la. site.

Sheffield.—TC received allocation of 2,000 houses in 1955 programme.

Slough.—£15,000 showroom proposed by George Fairweather & Ptnrs, FRIBA, 28, Wigmore-st., W1, for Slough Gas Board on corner site on High-st. Tenders to be invited in about two months.

Stockton-on-Tees.—BC received approval for removal of cattle market from site purchased in Yarm-rd. for new Town Hall and municipal offices.

Stockton-on-Tees.—BC proposes to build 330 houses this year. Plans by Boro' A.

Stockton-on-Tees.—EC proposes that during 1955-56 work should commence on replacement of Norton-rd. Gram. Sch.; new inf. and jun. schools at Fairfield; and new Redbrook Prim. Schools. County A. G. R. Clayton, Court-la., Durham

Stoke-on-Trent.—TC approved plans, warehouse at Tuscan Works, Forrester-st., for RH & SL Plant, Ltd.; erection of church at Dawlish-dr. and Brassington-way, Bucknall, for Bucknall PC Council.

Sunderland.—TC received loan sanction for £167,972 for erection of houses, bungalows and flats at Grindon Village and Hylton Castle estate.—Vaux and Assoc. Breweries, Ltd., plan additions to "Seaburn Hotel," including building of another 19 bedrooms, banqueting suite and cocktail bar. Architect, E. M. Lawson, Barras-bldgs., Barras Bridge, Newcastle-on-Tyne.—TC propose to erect industrial premises of 27,000 sq. ft., cost £34,000, to rehouse nine small firms to be displaced under Lawrence-st. clearance scheme. BE, T. Donkin, 27, Fawcett-st.

Sunderland.—Health Com. asking BC approve building of proposed new abattoir with by-products plant and meat market on site adjoining Fulwell fire station. Plans by Boro' A.—Hedley Swan & Co., Sunderland, owners of Jopling's Stores, seek permission to rebuild on site.—Corporation Welfare Com. approved building of hostel for old people on north side of town, est. cost £40,000. Plans by Boro' A, H. C. Bishop.—Northern General Transport Co., Chester-le-Street, Durham, hope to start building of large new bus station in the spring. Plans by company's staff.

Towcester.—RDC propose 10 houses at Potterspery, 6 at Deanshanger, 6 at Towcester and 6 at Old Stratford.

Tynemouth.—BC received allocation of 200 houses this year. Boro' S and A, D. M. O'Herhily.

Tynemouth.—TC's plan for converting chapel at Preston Cemetery, North Shields, into crematorium, approved by Min. Boro' S. D. M. O'Herhily, 16, Northumberland-sq., North Shields.

Washington (Co. Durham).—NCB Architects' Dept., Ashfield Towers, Gosforth, Northumberland, prepared plans for canteen at Glebe Colliery.

West Bromwich.—TC approved plans: Factory and offices at Blakemore-rd. for Progress Manufacturing Co. (West Bromwich), Ltd. (architect, A. J. Russell Green, 214, High-st., West Bromwich); amended plans for fourth storey and laboratories block to factory at Overend-st. for Dart Spring Co., Ltd. (architects, Hurley, Robinson & Son, 6, Cherry-st., Birmingham); new factory at Back-la. for M. Firkin, Ltd. (architect, T. M. Ashford, 13, Highfield-rd., Edgbaston, Birmingham).

Worcs.—County Cricket Club propose erection of stand to seat 550 at New-rd. Ground, Worcester.

Workington.—BC approved plans: Shops and offices at Oxford-st. for C. W. Murray. Architect, J. Saul, LRIBA, Nat. Prov. Bank Chambers.

TENDERS

* Denotes *accepted.*
† Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modification.*
¶ Denotes *accepted by H.M. Government Departments.*

Ashton-under-Lyne.—28 flats at Taunton estate, for BC: *Martin & Shepley, Ltd., Hyde, £39,662.

Bishop Auckland.—12 aged people's houses with 12 flats above on the Woodhouse-cl. estate, for the UDC: *Edwin Pye & Sons, East-parade, Bishop Auckland, £25,665.

Bolton.—Administrative block at Manchester-rd., for Edward Bullough, Ltd.: *Robinson Bros., Smethurst-la., Pemberton, near Wigan.

Bootle.—Furniture store at Stanley-rd., for H. Samuels: *H. Bennett, 39, St. Anne-st., Liverpool, 3.

Bristol.—Three-storey shop premises, junction of Horsefair and Merchant-st., for G. A. Dunn & Co., Ltd. Architect, J. N. Aylwin, ARIBA, 17, Soho-sq., W1. Surveyor, C. E. Ball & Partners, Dilke House, Malet-st., WC1. *A. N. Coles (Contractors), Ltd., Sutton-rd., Plymouth, £24,968.

British Railways (Eastern Region).—The undermentioned contracts have been placed: Trimming shop, carriage store and lavatory accommodation at Stratford Works, *W. & C. French, Ltd., Buckhurst Hill, Essex. Two pairs of houses at East Barnet, *A. J. Hooper & Sons (Finchley), Ltd., 2a, Fortisgreen, East Finchley, N2. Extension to up platform at Stepney East Station, *M. J. Gleeson (Contractors), Ltd., Haredon House, London-rd., near Cheam, Surrey. Reconstruction of repair shop at New England Motive Power Depot, Peterborough, *R. F. Herron, Ltd., Station-parade, Ickenham-rd., Ruislip, Middlesex.

Carlisle.—30 houses at Harraby, for CBC: *J. F. Johnston, Carlisle, £37,382. 24 houses at Harraby, for CBC: *H. V. England, Carlisle, £30,012.

Consett.—41 houses, for the UDC. Surveyor, F. Simpkin: *Direct labour.

Derby.—Clinic at Kitchener-ave., for TC: *Vic Hallam (Contractors), Ltd., Langley Mill, Notts, £10,970.

Dudley.—Simms-la. secondary modern school, for TC: *J. Hickman & Son (Brierley Hill), Ltd., Brierley Hill, Staffs, £116,649.

Durham.—Bishop Auckland Technical College, for the CC. County A, C. C. Brown, Court-la., Durham: *Gordon Durham & Co., East Bolden, £93,440 (subject to M of E approval). Steelwork: *Wright, Anderson & Co., Ltd., Gateshead.

Durham.—280 houses on various sites during 1955. Housing A, J. F. Willis, Byland Lodge, Durham; *Direct labour.

Felling (Co. Durham).—216 houses, for the UDC. R. Morton, Housing A, Council Offices Felling: *Direct labour, £297,634.

Fleetwood.—48 houses at the West View estate, for TC: *The Fleetwood Construction Co., Ltd., 141, Poulton-rd., Fleetwood, Lancs.

Glasgow.—Protestant public school at the Castlemilk housing development site No. 1. John Macnab, Council architect, Education Offices, Bath-st., Glasgow: *The Bristol Aeroplane Co., Ltd., Weston-super-Mare.

Glasgow.—Scheme of dwelling-houses at Tantallan-rd. and Camphill-ave., Langside. Architect, Norman M. Macfadzean (F), 147, West Regent-st., Glasgow: *John Lawrence & Co. (Glasgow), West Regent-st., Glasgow.

Heanor.—Houses at Godkin estate, for UDC: (12) *H. Stirland & Sons, Kimberley, £15,428; (24) *Ripleys, Ltd., 9, Moseley-st., Ripley, £28,875; (14) *T. J. Kew, Heanor, £15,688.

Kidderminster.—250 houses at Habberley estate, for TC: *G. Wimpey & Co., Ltd., London, £328,974.

Leeds.—Six-storey office block at Grace-st., Westgate, for Brotherton & Co., Ltd.: *Geo. Wimpey & Co., Ltd., Leeds.

LCC.—Three multi-storey blocks at Barrie-st., Paddington, W: *Wates, Ltd., £410,000.

¶London (Admiralty).—Particulars of contracts over £1,000 in value:—

Hants: Lining hangar, Eastwoods Specialists, Ltd., 158-160, City-rd., EC1. Heating installation, Norris Warming Co., Ltd., 18, Hampshire-terr., Portsmouth.

¶London (Air Ministry).—Contracts to the value of £500 or over for the week ended January 8:—

Building work: C. Syms & Sons, Ltd., London-road, Calne, Wilts; H. Ashton & Son, Newport Joinery Works, Barton-on-Humber, Lincs.; Rogers Bros., Ltd., Walton House, Felixstowe, Suffolk; A. Schofield (Builders), Ltd., "St. Bedes," Hornsea, E. Yorks; E. Goodwin & Sons, 34, Sackville-road, Bexhill-on-Sea, Sussex; Drabble Construction, Ltd., 44, Aylesbury-street, Bletchley, Bucks. *Painting work*: W. T. Pickering & Sons, Ltd., 12, Bowesfield-lane, Stockton-on-Tees, Co. Durham; M. A. Appleton (Contractors), Ltd., 22, Bilston-street, Wolverhampton, Staffs; William Herd & Co., Ltd., 88, Baker-street, W1. *Boiler house plant*: Comyn Ching & Co. (London), Ltd., 15-21, Shelton-street, WC2. *Building maintenance work*: G. H. Miller & Co., Ltd., Thorpe-road, Forest Gate, E7; Downing, Rudman & Bent, Ltd., Ward Barracks, Bulford Camp, Wilts.

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¶London (Air Ministry).—Contracts to the value of £500 or over for the week ended January 15:—

Building work: Bury Building Co., Ltd., Cannons Bridge House, Bury-st., Ruislip, Middlesex; Farrans, Ltd., Dunmurry, Belfast. *Runway work:* John Mowlem & Co., Ltd., 91, Ebury Bridge-rd., SW1; Tarmac, Ltd., Ettingshall, Wolverhampton. *Resurfacing work:* George Wimpey & Co., Ltd., Bridgeway House, Hammersmith Bridge-rd., W6. *Runway markings:* The Road & Drive Surfacing Co. (Thornton Heath, Ltd.), 558, Beulah-rd., Thornton Heath, Surrey; General Signs & Surfaces, Ltd., Bordon, Hampshire. *Artificers' work:* F. R. Hipperson & Son, Ltd., Invicta House, Wantz-rd., Dagenham, Essex.

¶London (MoW).—Contracts placed by Ministry of Works for week ended January 8:—

Berkshire: TE, Culver-rd., Earley, Reading, extension, E. C. Hughes, Ltd., Albion Works, Wokingham. *Cumberland:* PO ATE, Grey-st., Workington, erection of amplifier station, Thomas Armstrong, Ltd., South-st., Cockermouth, Cumberland. *Durham:* HPO, Northgate and Crown-st., Darlington, adaptations, F. Shepherd & Son, Blue Bridge-la., York. *Glamorganshire:* PO, Hengoed, erection of UA telephone exchange, T. F. Howells, Ltd., 83, Bartlett-st., Caerphilly. *Gloucestershire:* MOT Sea Transport Stores, Wapley, adaptations to form new boiler house, H. C. Wakefield & Sons, Ltd., Whitson-st., St. James, Bristol. *Midlothian:* Leith Docks, Edinburgh, erection of Leith waterguard building, John Best (Contrs.), Ltd., Warriston House, Edinburgh. *Northamptonshire:* Gladstone-rd., Northampton, erection of PO garage and workshops, Bosworth & Wakeford, Ltd., New-st., Daventry, Northants.

¶London (War Dept.).—Contracts placed by War Department for week ended January 1:—

Sussex: building work, L. F. Richardson, Chichester. *Middlesex*: electrical installations, S. Wolf & Co., London. *Shropshire:* Electrical installations, Hartley Installations, Ltd., Monkmoor. *Flintshire*: fencing, A. J. Binns, Ltd., London.

¶London (War Dept.).—Contracts placed by War Department for week ended January 8:—

Nottinghamshire: building work, F. Perks & Son, Ltd., Nottingham. *Northamptonshire*: painting and decorating, Spraycraft Co., Ltd., Bromley. *Derbyshire*: re-roofing W. T. Pickering & Sons, Ltd., Watford. *Shropshire*: building work, Burton Constructional Engineering Co., Ltd., Burton-on-Trent. *Warwickshire*: roadwork, Val de Travers, Asphalt Paving Co., Ltd., Birmingham. *London*: cladding, Melville Construction & Engineering Co., Sidcup. *Wiltshire*: building work, A. J. Dunning & Sons (Weyhill), Ltd., Weyhill. *Berkshire*: building work, L. F. Richardson, Chichester. *Hampshire*: building work, E. J. Logan (Putney), Ltd., London. *Somerset*: roadwork, Mendip Stone & Concrete Co., Ltd., Frome.

Marlow (Bucks).—16 houses on the Westhorpe-rd. and Newtown-rd. housing sites, for UDC: *H. Emery & Sons, Ltd., Keep Hill-rd., High Wycombe, £26,281.

Newcastle-on-Tyne.—Brewhouse, for the Northern Clubs Federation Brewery, Ltd., Hanover-sq., Newcastle. Architect, J. M. Angus, 21, Lovaine-pl., Newcastle: *CWS Building Dept., West Blandford-st., Newcastle-on-Tyne.

Port Glasgow.—30 houses and three shops at the Montgomerie housing development area. Frank Burnet, Boston & Bell, architects, 180, Hope-st., Glasgow. General contractors (subject to the approval of the Dept. of Health for Scotland): *Blackburn (Dumbarton), Ltd., Castle-st., Levenbank, Jamestown, Vale of Leven, £39,913.

Roehampton.—15 blocks of 12 storeys and five blocks of 11 storeys: *Wates, Ltd., £2,700,000.

St. Helens.—48 houses and 36 flats at Hard-la., for TC, and 75 houses at Broad Oak site: *Direct labour. College of Further Education at Water-st., for CC: *J. Gerrard & Sons, Ltd., Swinton, near Manchester. Extensions to factory, for Fothergill & Harvey, Ltd.: *Wm. Moss & Sons, Ltd., Roscoe-st., Liverpool.

St. Marylebone.—Four flats on the site of Nos. 17-19, Balcombe-st., NW1, for BC: *A. C. Pitt & Son, 94-96, Eversholt-st., NW1, £10,500.

Scarborough.—66 houses and a doctor's house and surgery at Eastfield, for TC: *E. Hunter (Scarborough), Ltd., £82,207.

Seaham.—50 "Unity" houses at Parkside, for the UDC. Surveyor, A. M. Smith: *C. M. Yuill, Ltd., Villiers-st., West Hartlepool.

Sedgley.—100 houses for UDC at Stickley-la.: *Wates, Ltd., London, £156,000.

Spennymoor.—52 houses on the Middestone Moor housing estate, for the RDC. Architect, G. H. Gray, Camden-st., North Shields: *Veti & Edwards, Ltd., West Sunniside, Sunderland. (subject to Ministry approval.

Stockport.—Extensions to the Alma Lodge Hotel, 149, Buxton-rd.: Vessey, Ltd., Marple, £26,877.

Stockton-on-Tees.—Branch library and flat at Roseworth, for the TC. Boro' A, T. C. Hartley, 28, The Square, Stockton: *L. Brown & Son, Boathouse-la., Stockton, £12,717.

Stone.—50 houses at Blythe Bridge, for RDC: *Elsby Bros., Sneyd-hill, Burslem, Stoke-on-Trent, £73,969.

Sunderland.—Four shops and flats, Hylton Castle estate, for the TC. Boro' A, H. C. Bishop, Grange House, Stockton-rd., Sunderland: *W. Wigham & Son, Castletown, £19,722.

Tamworth.—12 houses for RDC at Kingsbury: *Wates, Ltd., London, £13,824.

Tottington.—14 bungalows and 12 houses at Leemans Hill site, for UDC: *Stanley Porter, Ltd., Bolton, £32,113.

West Bromwich.—Fir Tree County Primary School, for EC: *Rock & Downes, Ltd., 115, Walsall-rd., Aldridge, £45,783.

West Bromwich.—84 houses, for CBC: *Wates, Ltd., London, £111,813.

Wigan.—Shops at the Market-st. frontage of the Market Hall, for TC: *Direct labour.

Wolverhampton.—Extensions at Bushbury, for Goodyear Tyre & Rubber Co., Ltd.: *T. McNulty & Co., Ltd., Willenhall, Staffs.

Worcester.—58 houses, for City C at Tunnell Hill: *Wates, Ltd., London, £78,670.

Wortley.—14 houses at Burncross-rd., Chapeltown, near Sheffield, for RDC: *T. Potter & Son, Longman-rd., Barnsley.

NEW COMPANIES

THE FOLLOWING NEW COMPANIES, registered in England, have been announced by Jordan and Sons, Ltd., company registration agents.

Derek Butt, Ltd. (540771.) Reg. November 19, 1954. Bldrs. Nom. cap.: £500. Dir.: D. F. Butt, Mon Abri, Norsey-rd., Billericay.

H. G. and T. W. H. Smith, Ltd. (540779.) Regd. November 19, 1954. Bldrs., contractors, etc. Nom. cap.: £1,000. Dir.: H. G. Smith, 37, Cubbington-rd., Leamington Spa.

John Knight (Builders), Ltd. (540807.) Regd. November 19, 1954. Nom. cap.: £2,000. Dir.: J. C. Knight, 2, Fenn Cottage, Ockley, Surrey.

Principal Developments, Ltd. (540898.) Regd. November 22, 1954. Bldrs. and contractors. Nom. cap.: £1,000. Dir.: R. Wigham, 9, Cedars-cres., Sunderland.

Thompson (Plant and Accessories), Ltd. (541269.) Regd. November 29, 1954. Mchts. of and dlrs. in plant and machinery used in connection with bldg. construction and civil engineering projects. Nom. cap.: £1,000. Dir.: to be apptd. by subs. Sub.: A. C. Wilson, 3, Douglas-gdns., Edinburgh, 4 (acct.).

A. E. Johnson (Builders), Ltd. (541788.) Regd. December 10. Nom. cap.: £1,000. Dir.: A. E. Johnson, Canley Hall, Ivy Farm-la., Coventry.

A. Cockerham & Son, Ltd. (541810.) Regd. December 11. 6, Central Court, Allhallowgate, Ripon, Yorks. Plasterers. Nom. cap.: £500. Dir.: A. Cockerham.

G. A. Rice, Ltd. (541826.) Regd. December 11. 1, Cyprus-av., Beeston, nr. Nottingham. Bldrs. and contractors. Nom. cap.: £2,000. Dir.: G. A. Rice.

Jack H. Turner & Co., Ltd. (541833.) Regd. December 11. 18, Newport-st., Ryde, I.W. Builders. Nom. cap.: £10,000. Dir.: J. H. Turner.

H. Everett, Ltd. (541861.) Regd. December 11. 1, Rufus-st., N1. French polishers, painters, varnishers, etc. Nom. cap.: £500. Dir.: to be apptd. by subs. Sub.: A. H. Richards.

Morpaint, Ltd. (541843.) Regd. December 11, Union-st. Saw Mills, Darwen, Lancs. Painters, decorators, paint spraying contractors. Nom. cap.: £1,000. Dir.: C. Morrell.

H. J. Sayer & Co., Ltd. (541873.) Regd. December 13, 85, Lewisham High-st., SE13. builders, public works contractors, civil engrs. Nom. cap.: £5,000. Perm. dir.: H. J. Sayer.

W. H. Smith (Plumbers), Ltd. (541887.) Regd. December 13, 32, Mansfield-st., Leicester. Plumber, heating and sanitary engineers. Nom. cap.: £5,000. Dir.: W. H. Smith.

Grays (Barnet), Ltd. (541903.) Regd. December 14, 10, Wentworth-rd., Barnet, Herts. Bldrs., contractors and decorators. Nom. cap.: £1,000. Dir.: A. A. Gray.

J. C. Morris Plastering Co., Ltd. (541907.) Regd. December 14, 56, Bradford-ter., Birches Head, Hanley, Stoke-on-Trent. Bldrs. and plasterers. Nom. cap.: £5,000. Dir.: J. C. Morris.

J. T. Donavan, Ltd. (541911.) Regd. December 14, 32, Feltham-rd., Ashford, Middx. Bldrs. and contractors, public works contractors. Nom. cap.: £1,000. Dir.: J. T. Donavan.

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